

**STRATEGIC
BOMBING
IN
WORLD WAR TWO**

**THE STORY OF
THE UNITED STATES
STRATEGIC
BOMBING SURVEY**

**BY
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CHAPTER ONE

ALL THE WINDS OF DOCTRINE

Though all the winds of doctrine were let loose to play upon the earth, so Truth be in the field, we do ingloriously by licensing and prohibiting to misdoubt her strength. Let her and falsehood grapple: who ever knew Truth put to the worse in a free and open encounter?

John Milton, *Areopagitica*

Autumn 1944, the eighteenth of October. Early in the afternoon, glancing from the window of his office on Broad Street in Newark, Franklin D'Olier could see that the weather report had been correct for once: clear skies with moderate winds, temperatures in the high sixties and lower seventies. Mr. D'Olier was sixty-seven years old and president of The Prudential Insurance Company of America. Born in Burlington, New Jersey, on 28 April 1877, he had been graduated from Princeton in 1898 and now, having achieved remarkable success in the business world,¹ he could count among his honors that of being a Trustee of his *alma mater*. What might he have been thinking of when his secretary informed him that General "Hap" Arnold, commanding general of the Army Air Forces, would like to talk with him on the phone?

If he had found time to look through *The New York Times* that morning, he would have had to go beyond page three to find news of anything save the war. Banner headlines proclaimed "Japanese Fleet Flees at Sight of U.S. Force; Americans Mop Up Aachen." Further down the page glowing reports of the Russian drive towards Germany from the east competed for attention with a report that "1300 U.S. Bombers Smash at Cologne," dropping 4,000 tons of missiles. After

nearly three years of worry and frustration, Americans were in a buoyant mood. The war was going well, and if the boys wouldn't be home by Christmas, that in itself was no reason not to hope for Easter. Although FDR's fourth campaign was approaching a climax, politics took second place in the American mind to the progress of the war. Optimism was the order of the day,² so much so that some feared the consequences of a general letdown in enthusiasm and effort. Appearing with the President in Omaha the evening before, at the national convention of American War Dads, Captain Eddie Rickenbacker warned that "one of the greatest underlying menaces of the moment with respect to maintaining the high pressure of our war effort is too much optimism." He warned that "swivel chair strategists" and "typewriter tacticians" were "threatening the backbone of our will to sustain the war effort . . . with their twaddle about the early conclusion of the war."

Perhaps Mr. D'Olier noticed this report, appearing as it did close by extensive coverage of Wendell L. Willkie's funeral in Rushville, Indiana. War was not new to Mr. D'Olier, who had been commissioned a captain in the Field Artillery in 1917 and had accompanied the A. E. F. to France where he had organized the A. E. F. Salvage Service. Discharged in 1919 as a lieutenant colonel of the General Staff Corps, he had been decorated with the Distinguished Service Medal and the Cross of Commander in the French Legion of Honor. That same year he was elected the first national commander of the American Legion. And now, in this morbid extension of the Great War, he was himself a "War Dad," his son serving as a major in the Army Air Forces.

After an exchange of pleasantries, General Arnold, addressing Mr. D'Olier as "Colonel," got down to business. The general explained to Mr. D'Olier that he had a job for him to do, a very important job, one of such consequence that the future not only of the Air Forces but also of the nation's entire postwar defense policy might be affected by its outcome. Explaining that the matter was not one he could discuss over the telephone, General Arnold asked if Mr. D'Olier could possibly arrange to receive his personal emissary the following day. Perhaps stunned, perhaps only intrigued, but certainly not feeling himself at this stage in any position to say no, Mr. D'Olier agreed to do so.

Early in the afternoon of the following day Colonel Bradley J. Gaylord,³ a former business associate of Mr. D'Olier now serving

with the Army Air Forces, presented himself at D'Olier's office in Newark. With him he carried a letter from General Arnold that explained in broad, general terms the nature of the "tough job" General Arnold had in mind.⁴ Briefly, the letter advised "Colonel D'Olier" that the President had suggested to the secretary of war the need for a comprehensive survey of the effects of the strategic bombing offensive against Germany. Such a study, the letter went on, would have a considerable influence, not only on the future of the military establishment, but also on the planning of future factories, industrial establishments, and even cities. After mentioning that "Mr. [Robert A.] Lovett [assistant secretary of war for air] and I feel that you have the necessary qualifications to head this survey as Chairman," General Arnold concluded with the hope that Mr. D'Olier might find it possible to take on the task "not only as a national service but as a benefit for the Army Air Forces, so that we can be prepared for the future." Attached to this letter was a photostatic copy of an earlier letter from President Roosevelt to Secretary of War Stimson.⁵

After a brief discussion with Colonel Gaylord, Mr. D'Olier spent Thursday evening and Friday morning considering the offer and conferring with his family and business associates. Then at noon on Friday he telephoned Colonel Gaylord, who had returned to Washington, to arrange a meeting with General Arnold. At the colonel's suggestion, Mr. D'Olier agreed to take the afternoon train to Washington where he would meet Colonel Gaylord at the Mayflower Hotel at 7:00 that evening, a conference with General Arnold and Assistant Secretary Lovett having been arranged for Saturday morning.

What might have gone through Mr. D'Olier's mind while on the train to Washington is lost to history. But whatever it might have been, and it certainly involved wondering about the immediate future, we can certainly hope it did not involve plans for the forthcoming Thanksgiving Day; as matters were to turn out, Mr. D'Olier's dinner that day would consist of a Spam sandwich, a cup of coffee, and doughnuts at an airstrip near Rome. How Mr. D'Olier came to be considered for the task that lay ahead, how the task itself was identified—these are the basic questions to which these opening chapters will address themselves.

The Origins of "Strategic Bombing"⁶

When Franklin D'Olier was asked to assume the chairmanship of a select committee that would seek to evaluate the effects of strategic bombing in Europe, the Army Air Forces had been flying bombing missions over Europe for just over two years. Yet when twelve B-17s of the Eighth Air Force attacked Rouen on 17 August 1942, this marked the beginning⁷ of a strategic air war that had conceptual roots running at least as far back as H. G. Wells's *War in the Air*.⁸

In its infancy in World War I, military aviation played an occasionally spectacular, increasingly important, yet largely unessential part.⁹ Yet during the war virtually every theory, attitude, ideal, hope, and debate that was to mark the course of air warfare a quarter of a century later was foreshadowed. The German air offensive against Great Britain beginning in 1915, and the creation of the Royal Air Force and of its Independent [Bombing] Force in 1918, were each, in the most literal sense, epochal events.¹⁰

World War I did not produce agreement as to the best employment of aircraft in battle; it merely provided material for the continuing controversy. "They should serve as extensions of the eyes of the ground commander," said some. And this, indeed, was the function assigned to them at the beginning; but it was not the sole function long. Technological improvements led to further experiments and soon there were ground commanders who envisaged the best use of aircraft to be that of acting as a sort of mobile artillery, applied directly in support of ground armies. By war's end, spurred on largely by the German example, a third vision arose—that of an air force operating independently of armies and navies. The task of such a force would be to attack the enemy at places far removed from the battle lines, the purpose being to destroy essential elements of the enemy's war capability by bombing his factories, his transportation and supply depots, and his centers of government. The Smuts Memorandum of 17 August 1917, the paper that led directly to the creation of the Royal Air Force, discussed air warfare in these terms:

As far as can at present be foreseen there is absolutely no limit to the scale of its future independent war use. And the day may not be far off when aerial operations with their devastation of enemy lands and destruction of industrial and populous centres on a vast scale may become the principal operations of war, to which the older forms of military and naval operations may become secondary and subordinate.¹¹

Thus, assuming little or no opposition from enemy aircraft, three roles that aircraft might play in warfare were identified: Observation (or reconnaissance), Attack (in the sense of tactical ground support), and Strategic (or independent). The reality of an enemy also armed with aircraft produced still another role, that of a Pursuit (or fighter) capability whereby the enemy's aircraft might be destroyed in the air.¹²

In the decade following the war the pace of technological development slowed while theoretical speculation continued apace. In Great Britain the RAF, fighting for its institutional life, experimented with the concept of "air control" in which means were sought to apply military aircraft to the policing functions of the Empire. In the United States the Army's Air Service, led on by the exploits of Brigadier General Billy Mitchell and the hopes and dreams of a few aircraft manufacturers, began its long battle to achieve institutional parity with the Army and Navy.¹³ The apparently logical path to such an achievement lay in the direction of identifying, seizing upon, and exploiting a unique "role" or "mission" that air forces *alone* could apply in warfare. If that could be achieved, if a powerful case could be made for the efficacy of the "third dimension to warfare," then a third service might well follow.

As time passed some of the airmen, not unlike other visionaries, gave their own meaning to certain words; two of these, "strategic" and "independent," require explanation. The general tendency that developed was to use these words to mean virtually the same thing, bombing operations conducted independently of surface forces, whether on land or sea. When used in a technical sense, to be sure, "strategic bombing" was identified as that directed against the sustaining resources of an enemy's war capability. But from the beginning—and, indeed, ever since—critics have pointed out that bombing missions designed to assist the advance of surface forces have as much right to be called "strategic" as any other type of bombing operations. No easy solution to this semantic difficulty has appeared. The innovators among the airmen, convinced that they had at hand a new way of waging war, needed to call it something and they chose the term "strategic bombing." They might have called it something else, but to what purpose?

The airmen might, for example, have chosen to distinguish between "strategic military bombing" (in support of the ground battle) and "strategic economic bombing." Doing so, however, could only have

reduced the force of the argument in favor of "independent" operations. The choices (if, indeed, they were so considered) lay between strategic bombing, independent bombing, and economic bombing. What Samuel Huntington calls "the military ethic" would militate against any highlighting of the word "independent," connoting as it does any number of notions not likely to win favor with the "military mind," however defined; to have highlighted the word "economic" would have been to bring out in the open the essential conflict between the views of the airmen and those of the Army general staff, the latter holding as their "First Commandment" that the route to military victory lay in the defeat of the enemy armed forces in battle. Finally, by calling it "strategic" bombing the airmen implied that the provision for such operations was entitled to a place of its own in the formulation of basic war strategy.

Hence, strategic bombing¹⁴ (or bombardment) became the term commonly applied by airmen to designate long-range bombing operations. Under this generous mantle they would later find it possible to include many types of missions, including those flown in direct support of ground armies. But for the period between the wars, the chosen term served the important purpose of suggesting the gains that might be achieved by long-range operations conducted independently of the ground battle. In this way, with perseverance and luck, a persuasive case might be made for placing the control and direction of such operations outside existing service parameters. There can be no gainsaying, as well, that those who believed a new element had been added to warfare were also convinced, and with good reason, that this element could be developed best in an atmosphere untrammelled by devotion to traditions and command arrangements dating back at least to the nineteenth century.

It would be wrong, however, to conclude that the drive toward institutional autonomy was the only, or necessarily the primary, driving force behind the vision of Mitchell and his followers. On the contrary, the principal emotional stimulus was a sincere, if largely intuitive, conviction that the "warfare of the past" was just that—that the warfare of the future would be dominated from the air. Accepting this as given, those in a position to do something about it were then duty bound to find the ways and means of assuring that if war came, the United States would be prepared to wage and win the war in the air. Like most revolutions in thought, that fostered by the military aviators between the wars far outpaced in vision the means by which it

could be carried into effect. Yet when the War Department authorized the establishment of eleven special service schools for the Air Service in February 1920, the door was wedged open and in the room beyond lay opportunity.

Among the schools created in 1920 was the Air Service Tactical School at Langley Field in Virginia. From a rude and makeshift beginning this school, in the persons of its instructors and students, was to mold a theory for the employment of air forces in war that would be tested all too soon. Throughout its history, the curriculum at the Air Corps Tactical School¹⁵ covered all aspects of aerial tactics and strategy. But beginning around 1926 and rapidly accelerating after 1932, the strategic role of air forces emerged as the dominant theme. The reason was not simply that the strategic role offered the best possibilities for an independent mission; also relevant, and perhaps equally so, was the trend of technological advance in aircraft. With the appearance of the B-9 and B-10 in the early thirties and with the first flight of the experimental B-17 in July 1935, the means to apply what had hitherto been only a theory seemed at hand. And reinforcing the dreams of the strategic air theorists was the then apparent impossibility of building a pursuit aircraft¹⁶ that could match in speed, range, or altitude the multi-engined bomber. With the addition of a means, the B-17, to a goal, independent operations, there remained to be worked out a precise "theory of employment" by which the goal might be attained. As frequently happens in an era of rapid technological change, both the innovators and the apparent trend in technology emphasized the need to concentrate on *offensive* capabilities.

By 1939 a theory of employment had been derived.¹⁷ In brief it may be described as follows: the most efficient way to defeat an enemy is to destroy, by means of bombardment from the air, his war-making capacity; the means to this end is to identify by scientific analysis those particular elements of his war potential the elimination of which will cripple either his war machine or his will to continue the conflict; these elements having been identified, they should be attacked by large masses of bombardment aircraft flying in formation, at high altitude, in daylight, and equipped with precision bombsights that will make possible the positive identification and destruction of "pin-point" targets; finally, such bombing missions having been carried out, the enemy, regardless of his strength in armies and navies, will lack the means to support continued military action. Unhappily for

the historian this theory of war strategy cannot be attributed to any one person or even any single group of persons, nor to any one nation or any single decade. Yet while the complexity of its evolution may befuddle the most earnest researcher, some of the highlights, at least, must be mentioned.¹⁸

Building upon the experience of World War I, the Italian General Giulio Douhet published his *Command of the Air* in 1921.¹⁹ Unlike Mitchell, whose aim was to stimulate the development of *all* aspects of the military air potential, Douhet set his sights squarely on the strategic role of bombardment aircraft. In briefest compass, his view of future strategy was that a nation should resist on the ground while it massed for an offensive in the air. While recognizing the importance of target selection, Douhet nonetheless devoted few lines to this crucial question, owing probably to his inherent assumption that both incendiary bombs and others containing poison gas would complement the effects of high explosive weapons. For Douhet, all aircraft types other than bombers were ancillary, nice to have in certain circumstances, perhaps, but of a distinctly lower order of importance. Victory would be brought about by masses of heavy bombers destroying the enemy air force on the ground and continuing on to devastate his cities and industries.

The degree to which Douhet's theories influenced the instructors at the Air Corps Tactical School is, and seems destined to remain, a matter of conjecture. But it is known that an English translation of his book was available there as early as 1923.²⁰ When one compares the fully-developed American theory of the late thirties with that of Douhet, however, it appears certain that whatever influence he had was inspirational more than anything else.²¹ What clearly distinguishes the theory evolved at the Tactical School was the emphasis placed on the question of target selection.

Beginning about 1932, perhaps because they found it impossible to envisage bomber fleets of the size implied by Douhet, some instructors at the Tactical School began to wonder whether it might be possible, through careful, scientific study of a nation's industry, to single out particular targets whose destruction would of itself bring to a halt an entire industry or series of industries. If a number of such targets could be identified and destroyed, it might just be possible, with a relatively small force, to bring an enemy's war production to a halt with almost surgical precision. Accordingly informal studies were set in motion, using the United States as a test case, to determine the

degree of industrial concentration, the component parts of various industries, the relative importance of each of the parts, and the vulnerability to air attack of what appeared to be the most critical elements.²²

Identifying targets was one thing; hitting them from the air was something else. Yet technology, at least for the optimists, seemed to be keeping pace. The B-17 had range, speed, altitude, and bomb-carrying capacity that was considered equal to the task.²³ And when orders were placed for improved models of the Sperry bombsight and for the new Norden Mark XV bombsight (both in 1933), it appeared likely that the day might not be far off when a fleet of perhaps one hundred B-17s could take off from some friendly base (perhaps in England), fly at high altitudes (perhaps 25,000 feet, the purpose being to get above enemy antiaircraft guns and defensive fighters) for several hundred miles, and arrive over a carefully chosen enemy target. There, grouped together in a large formation (to multiply both the amount of force delivered on the target and the defensive firepower, if needed, of the bombers' guns), they would carefully "sight in" the target (with the new bombsights), trigger their bomb loads, and then return several hundred miles to their base. Behind them they would leave a badly crippled, if not devastated, industry (actually only one factory, perhaps, but so chosen that its destruction must inevitably cripple an entire industry). The question of whether such attacks would take place at night or in daylight was decided for the latter on the basis of the improved accuracy to be expected. The question whether the bomber fleet should be escorted to the target by fighter aircraft was decided in the negative primarily for the reason that no such aircraft of sufficient range existed.

Such, in rough and perhaps ungenerous outline, was the theory of "daylight, high altitude, precision bombardment of selected targets" that the Army Air Forces brought with them into World War II. As Mr. D'Olier and his associates were to discover—indeed, as its very progenitors were to discover—this theory, constructed without conscious precedents in the peacetime vacuum, contained some assumptions that failed to prove out. Some of these were discussed in 1951 by Major General Haywood S. Hansell, Jr., who had been a bombardment instructor at the Tactical School.

The fanatical belief of the bombers in their own defensive fire power was not so much a choice and election to operate unescorted as it was a conclusion that fighters could not be built

with sufficient range to accompany them. The Pursuit Section, on the other hand, wanted no part of the escorting problem. They just as fanatically contended that fighters should be built purely and solely for operation in anti-aircraft defense. . . . We had a tendency to build our doctrine around the drawing board designs and the expected performance of aircraft still in the design stage. On this basis we unquestionably magnified our expected capabilities and minimized our limitations. . . . Our doctrine held that bombers in proper formation could conduct a running fire fight and preserve themselves against fighter attacks. Unquestionably this was based on hope and not on existing fact. . . . In the period before the war our lack of experience led us to be far too optimistic in gauging the number of bombs and the number of trials it would take to destroy a target.²⁴

Reflecting the absence of an outside umpire, someone who might have been able to identify and prevent such errors, the bombardment theory evolved at the Tactical School contained shortcomings that will be brought out in later chapters. For the moment, however, it is necessary to consider how this theory, evolving into a doctrine, came to be incorporated in America's basic war strategy, and how it fared in its initial test.

Strategy Finds a Place for Air

With the outbreak of war in Europe in 1939, the military and naval staffs in Washington began to prepare for the possibility of the United States' becoming involved. Numbers of Air Corps officers, drawn from various specialties, were sent over to Great Britain to spend months observing and studying the Royal Air Force. Into Washington from outlying billets came many of the brightest, most energetic officers of each service. Ranking officers of long and faithful (if often pedestrian) service were cut from the ranks with what, to some of them, appeared all but ruthless abandon. The fledgling Army Air Corps, still looked upon by the War Department General Staff (WDGS) as a vexing, presumptuous stepchild overly fond of going outside the family for sympathy and assistance, soon found that it had important friends in high places.

Whether they intended it or not, the two men who did most to assure a significant role for air forces in the approaching war were President Franklin D. Roosevelt and General George C. Marshall, the Army chief of staff.²⁵ Working closely with both of them was

Lieutenant General H. H. "Hap" Arnold, chief of the Air Corps and, after March of 1942, commanding general, Army Air Forces. As early as November 1938 the President asked the War Department to prepare a program for an Air Corps of 10,000 planes. In a special message to Congress in January 1939 he decried the state of our "utterly inadequate" air forces and begged further expenditures from a reluctant Congress. Until well into the war the President continued to set "impossible" goals for aircraft production, raising his sights from 10,000 planes a year to 50,000 and finally to 100,000. To be sure, "FDR and Marshall did not just pull these numbers out of the air. Arnold played a major role in setting these goals and probably had an indirect inspirational role with FDR as well as coming up with figures when appropriate."²⁶

The forced expansion of the aircraft industry served many purposes. In the first place, Great Britain was already engaged in an air war with Germany and the most immediate assistance the U.S. could render was in the form of equipment (aircraft, ships, etc.) rather than men.²⁷ In the second place, a fleet of bombers stationed in England might provide a capability, should war, in fact, come, of striking quickly at Germany. Whether the President, after the fashion of Winston Churchill, actively sought such an option is open to question. But down at the working level in the planning offices of the Air Corps, "the word from the top" was that the President was "open to suggestion."²⁸

Like the President, George C. Marshall could find many reasons actively to encourage the creation of a viable air force. If his armies should, in fact, have to come to grips with the *Wehrmacht*, their fate would be sealed unless there were a force able to deal with the by then world-famous *Luftwaffe*. The immediate problem of bolstering the defense of the Philippine Islands led him by 1941 to adopt an earlier Navy view that a buildup of air power in the Philippines might deter Japanese aggression in the Far East. Also relevant was his awareness, from the very beginning of any talk about invading the European continent, that any landing on the shores of Europe was unthinkable in the absence of assured air superiority over the point of assault. For these and many other reasons, the occasionally bitter wrangling between soldiers and airmen that had marked much of the inter-war period was laid to rest . . . for a season.

Thus encouraged from above, the Army Air Corps planning staff set to work in the summer of 1941 to create an overall plan for the

employment of strategic air forces in the European war. The immediate occasion of their doing so was a request from the President in July, addressed to the secretaries of war and navy, to prepare an estimate of the "overall production requirements required to defeat our potential enemies." Although the request was intended to produce a basis for planning munitions production, a group of brilliant young officers in the Air War Plans Division, all former instructors at the Tactical School, saw in it an opportunity to present a full-blown plan for a strategic air offensive. Known as AWPDP-1, this plan postulated that the major contribution of the Army Air Forces would be a strategic bombing offensive designed so to weaken Germany's war-making capability that an invasion, if necessary, could be accomplished. To do so would require an immediate start, the creation of 239 combat groups, and the provision of 63,467 aircraft and 2,164,916 men. Given such emphasis and resources, reasoned the planners, such an air offensive could reach full strength by April 1944. The plan recommended that the primary target objectives be Germany's electrical power grid, transportation network, and petroleum industry.²⁹

A Brief Sketch of Operations Over Europe Through Spring 1944

Less than three months after the presentation of AWPDP-1 the United States found itself at war with Germany. In the hectic months that followed, the AAF worked night and day to organize, train, and equip a strategic bombing force that could begin operations from bases literally thrown together in England.³⁰ From the outset the American commanders were beseeched by their Royal Air Force counterparts to set aside, as unworkable, their theory of daylight bombing. The British had started out with a theory of employment remarkably similar to that derived at the Air Corps Tactical School. They had quickly found, however, that once their bombers ventured beyond the range of fighter escort the rate of loss inflicted by the *Luftwaffe* rose to unacceptable levels. Worse yet, the British experience with so-called precision bombing had failed miserably, many crews having missed their intended targets by distances up to five miles and more. In an effort to reduce losses to the *Luftwaffe*, RAF Bomber Command had switched over from day to night operations. This changeover only further compounded the difficulties associated with finding and hitting precise targets. So, as a

result, Bomber Command had adopted the technique of aiming at target *areas*, principally cities geared to war production, hoping to maximize the effects—*whatever* effects—that their bombs might have. By mid-1942 it is fair to say that the operational goal of Bomber Command had become that of destroying the ability and will of German production workers to continue their war efforts.

It is important to remember that the British had been driven to adopt this technique by the operational limitations inherent in their equipment and prewar training. As early as July 1941 the chief of staff, Royal Air Force, had declared that "the most suitable target from the economic point of view is not worth pursuing unless it is tactically attainable." By 14 February 1942 a directive had been issued to Bomber Command to the effect that the primary object of the bombing campaign was to be the morale of the enemy civilian population, and, in particular, of the industrial workers. Eight days later, with the appointment of Air Marshal Sir Arthur Harris as commander of Bomber Command, the goal of "de-housing" the German industrial workers was effectively set in concrete for the remainder of the war.³¹

The American commanders were horrified at all this, not so much at the sequence of events that had been described, as at the conclusions that had been drawn. There must be a way, they felt, to apply force more selectively. One thing was certain, and that was that they were going to try, at least, to proceed according to their own theory of daylight, precision bombing. If circumstances should prove them wrong, they felt, change could always be introduced; but the idea of changing before they had even begun was anathema to the American commanders.

On 17 August 1942 twelve B-17s of the newly created Eighth Air Force launched the daylight bombing experiment. By late November some twenty-three attack missions had been flown, most of them against targets in France and Holland and in formations numbering less than thirty aircraft. Although encouraged at first by negligible air opposition from the German Air Force, the Operations Staff at Eighth Air Force soon felt the pangs of discouragement. Most of their crews had been sent overseas before their training had been completed in the States, the idea being to complete their training in England. But the autumn weather over England was less than cooperative and in the event most "training" had to be accomplished on actual bombing missions.³²

Perhaps most galling to those with high hopes for early success was the series of diversions, so-called, from the basic plan for the air attack on Germany, diversions demanded by the grand strategy established by the Combined Chiefs of Staff (CCS).^{*} The first of these was a bombing directive of 20 October 1942 naming as first priority for attack the submarine staging bases on the coast of France. This decision reflected the growing concern of the CCS over the outcome of the Battle of the Atlantic as well as a desire to offer additional protection for the shipping requirements needed to support the November landings in North Africa (Operation TORCH). Soon thereafter the two most proficient Bomb Groups of the Eighth Air Force were despatched to North Africa to support the surface operations aimed at dislodging Rommel from that continent. And back in Washington General Arnold was soon engaged in a battle of his own, this one with the Navy which sought to divert a larger share of heavy bomber production to the war in the Pacific (where, to the utter dismay of the airmen, the aircraft would be used primarily for long-range patrol and reconnaissance).

In January 1943 the Combined Chiefs of Staff met at Casablanca to determine an overall strategy for the defeat of Germany. Among the decisions confirmed at that conference was that an invasion of the western European continent could not be launched in force until at least the spring of 1944. At the same time it was determined that in order to prepare the way for such an invasion, the Eighth Air Force and the RAF should launch a sustained bomber offensive from bases in the United Kingdom. The ultimate objective of that offensive was stated to be "the progressive destruction and dislocation of the German military, industrial, and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened. This is construed as

^{*} "Diversions," like "strategic" as applied to bombing, is a potentially loaded word. In these pages it is used in the same sense that the bomber commanders used it during the war, i.e., to denote any sort of bombing mission directed by higher authority that had the effect of diverting part of the strategic bomber force from the primary target systems that the bomber commanders considered most profitable. Confounding the problem was a lack of agreement among the bomber commanders; what was a "primary objective" to General Spaatz was more often than not a "diversion" in the eyes of Air Marshal Harris. For a discussion of such semantic difficulties as late as 1944, see Webster and Frankland, 3, 42-43.

meaning so weakened as to permit initiation of final combined operations on the Continent." The primary targets for the time being were listed in the following order of priority: (1) German submarine construction yards, (2) the German aircraft industry, (3) transportation, (4) oil plants, and (5) other targets in enemy war industry.³³

During the first half of 1943, the Eighth Air Force concentrated on the anti-submarine campaign,³⁴ its remaining efforts during the period appearing, in the words of the official history, "tentative, scattered, and light." The logistical and personnel build-up continued to be slower than hoped for, so much so that "combat crews saw in the statistics of attrition and replacement the likely prospect of a short career."³⁵ A few tentative raids were made into Germany, but these became increasingly expensive as the opposition increased, German air strength in the west being augmented by units moved to France and northern Germany from the Mediterranean and Russian fronts. As the numbers of German defensive aircraft increased so also did the skill of their pilots, and the early hopes that the B-17s and B-24s could operate beyond the range of fighter escort began severely to be questioned.

Growing concern over the German Air Force was reflected in the Combined Bomber Offensive Plan (C.B.O. Plan) promulgated by the Combined Chiefs of Staff on 14 May 1943.³⁶ This plan reflected the efforts of the Committee of Operations Analysts (COA) and General Arnold's Advisory Council, both in Washington,³⁷ and the RAF, the British Ministry of Economic Warfare, and Eighth Air Force leaders in England. Based on the most thorough analysis yet made of vulnerable targets in Germany, it identified six systems comprising seventy-six precision targets. The six systems were: (1) submarine construction yards and bases,³⁸ (2) the German aircraft industry, (3) ball bearing manufacture,³⁹ (4) oil production, (5) synthetic rubber and tires, and (6) military transport vehicle production. However, while these six systems were listed as the "principal objectives," one overriding "intermediate objective" was stipulated; this was the German Air Force, particularly its fighter strength.

*If the growth of the German fighter strength is not arrested quickly, it may become literally impossible to carry out the destruction planned and thus to create the conditions necessary for ultimate decisive action by our combined forces on the Continent.*⁴⁰

The worst fears of the planners materialized during the summer and autumn of 1943. Growing in strength, the Eighth Air Force launched a series of attacks, many of them in formations numbering upwards of two hundred aircraft each, against targets specified in the C.B.O. Plan. But once beyond the range of their fighter escorts, and this meant whenever they penetrated German air space, the bombers suffered severe losses. In August a double mission was launched against the ball bearing plants at Schweinfurt and the Messerschmidt aircraft complex at Regensburg. Of 376 B-17s despatched, 315 found their targets and attacked; but in the ensuing air battles, sixty of the bombers were shot down—a loss of 16 percent of those despatched and 19 percent of those attacking. Worse was to come.

During the second week of October the Eighth launched four major efforts against targets deep inside Germany. On the last of these, on 14 October against Schweinfurt, the force penetrated into Germany well beyond the range of the then available escort fighters. Here was the test of a theory; even the selection of the target reflected the long held hope of destroying a particular element of industry whose loss would result in a "bottleneck" in production. The *Luftwaffe* rose in defense and of the 291 bombers despatched, sixty failed to return, seventeen suffered major damage, and 121 sustained reparable damage. Although the attack got through to the target and caused considerable damage, such a rate of loss by the attacking force could not be consistently borne. Clearly, until the German fighters were driven from the skies, a new technique was necessary.⁴¹

From November 1943 through the third week in February 1944, the principal ally of the German Air Force—foul weather—became the dominating factor in the air war. Throughout the entire period there were less than half a dozen days on which the weather permitted visual bombing over Germany.⁴² In the interim, experiments were begun with radar-aided bombing techniques (to make it possible to bomb through cloud cover) and a thorough reorganization of the strategic air forces was accomplished. On 1 November 1943 the Fifteenth Air Force was established under Major General Nathan F. Twining, and by December it had moved into place with its headquarters at Bari, Italy, and most of its bombers in a complex of bases around Foggia. Early in January Lieutenant General Ira C. Eaker, who had commanded the Eighth's bomber forces in England, went to Italy to take command of the Mediterranean Allied Air Forces (MAAF), headquarters at Caserta. (Eaker was replaced at Eighth Air Force by

Major General James E. Doolittle.) Among Eaker's new responsibilities was general supervision of the activities of the new Fifteenth Air Force. But to coordinate the operations of the Eighth and the Fifteenth, a new headquarters was established in London, the command being given to Lieutenant General Carl A. Spaatz, who had been General Eisenhower's air deputy in North Africa. The new command, christened United States Strategic Air Forces (USSTAF), was made responsible for the overall direction of the American strategic air effort in Europe. While these changes were taking place the bomber force, in effect, stood down, waiting for the weather to break and for the arrival in mass of the long-awaited long range escort fighters. During this same period, RAF Bomber Command launched its ill-fated night bombing offensive against Berlin,⁴³ an offensive in which the loss rates paralleled those of the Americans in the months leading up to October 1943. As 1943 turned into 1944 it had become abundantly clear that success over the *Luftwaffe* in the battle of the air was the necessary prerequisite for the success of *any* bombing offensive, however conceived and executed. For the Allied bombing effort, the moment of crisis had arrived.

Despite the assumptions of the Air Corps Tactical School in the thirties that long range escort was probably not feasible, the authors of AWPD-1 had urged its development as at least an insurance factor. And although work was intensified on the problem at Wright Field (Dayton, Ohio) in 1942, it was late in 1943 before such aircraft began to arrive in England.⁴⁴ The eventual answer to the problem was the P-51 "Mustang," but improvements on the P-47 "Thunderbolt" late in 1943—essentially the addition of jettisonable fuel tanks—gave promise of greatly increased range. When first employed, however, the effectiveness of the new escort fighters was hampered by the tactical decision that they should do exactly what their name implied; that is, they were to escort, convoy one might say, the bombers to the target, operating offensively only to drive off attacking enemy aircraft. This pleased the harried bomber pilots no end—the sight of friendly fighters flying alongside over enemy territory was an agreeable novelty—but it frustrated the fighter pilots. They argued that they could be far more effective if most of them were allowed to break loose from the bomber formations and go over to the attack the instant that enemy fighters were sighted in any quadrant—indeed, if a fair proportion of them were allowed to precede the bomber formations in a coordinated series of fighter sweeps. As events were to show,

**STRATEGIC
BOMBING
IN
WORLD WAR TWO**

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**THE STORY OF
THE UNITED STATES
STRATEGIC
BOMBING SURVEY**

**BY
DAVID MacISAAC**

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———For the airmen who never returned

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NOTE GUIDE AND GLOSSARY

The nature of the principal sources for this study is such that it seems appropriate at the outset to explain a few of the techniques that have been adopted in the notes. While the Bibliography describes in detail the various manuscript collections and the Glossary below explains abbreviations used in the text, a few sample citations will help to illustrate the peculiarities of usage adopted herein.

The citation NA, 243, 1, 36, 300.6-F means, at length, National Archives, Record Group 243 (files of the U.S. Strategic Bombing Survey), Entry 1 of the Record Group (Administrative Correspondence, Office of the Chairman), Box 36 within Entry 1, and the folder within that box numbered 300.6-F. Thus, when citing a letter from Franklin D'Olier to Paul Nitze, the format used is as follows: "Ltr, 24Dec44, D'Olier to Nitze, NA, 243, 1, 66, 322."

Another principal source was the contemporary history compiled during the course of the Survey activities by Major James Beveridge. Volumes 2 and 4 of his unpublished typescript are "Volumes of Appendices" to the narrative volumes covering Europe (Vol. 1) and Japan (Vol. 3). Since the pages of Volumes 2 and 4 are not numbered, references are given to "frame numbers" and correspond to the microfilm copy of the history available from the Office of the Chief of Military History, U.S. Army. This source is cited as follows: "Beveridge, Vol. 1, p. 131," or "Beveridge, Vol. 2, frame 968."

The official histories of the U.S. Army Air Forces and of the Royal Air Force Bomber Command are cited as follows: Craven and Cate, volume number and page number, for Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II* (7 vols;

University of Chicago Press, 1948-1955); Webster and Frankland, volume number and page number, for Sir Charles Webster and Noble Frankland, *The Strategic Air Offensive Against Germany, 1939-1945* (4 vols; London: H.M.S.O., 1961).

When one of the published reports of the Strategic Bombing Survey is cited, the form used is as follows: "*Cologne Field Report* (USSBS European item Nr. 41), p. 16." To find a complete list of reports for both Europe and the Pacific, refer to the back pages of any USSBS report (except numbers 1, 2, or 3 for either Europe or the Pacific) where reports are listed by number, title, and USSBS Division of origin.

GLOSSARY

AAC	Army Air Corps
AAF	Army Air Forces
AC	[Army] Air Corps
AC/AS	Assistant Chief of Air Staff
ACTS	Air Corps Tactical School
AEC	Atomic Energy Commission
AWPD	Air War Plans Division
BBSU	British Bombing Survey Unit
C.B.O.	Combined Bomber Offensive
CCS	Combined Chiefs of Staff
CIA	Central Intelligence Agency
CIG	Central Intelligence Group
C.I.O.S.	Combined Intelligence Objectives Subcommittee
COA	Committee of Operations Analysts
CVE	Escort Carrier
EAC	European Advisory Commission
EOU/EWD	Economic Objectives Unit, Economic Warfare Division
ETO	European Theater of Operations
ETOUSA	European Theater of Operations, U.S. Army
EWD	Economic Warfare Division
FEA	Foreign Economic Administration
FEAF	Far East Air Forces
Hq	Headquarters
JCS	Joint Chiefs of Staff

JSSC	Joint Strategic Survey Committee
JTG	Joint Target Group
Ltr	Letter
MAAF	Mediterranean Allied Air Forces
Memo	Memorandum
MEW	Ministry of Economic Warfare -
MIS	Military Intelligence Service
MIT	Massachusetts Institute of Technology
Msg	Message
MTO	Mediterranean Theater of Operations
NACA	National Advisory Committee on Aeronautics
NDRC	National Defense Research Committee
NRA	National Recovery Administration
OA	Operations Analysis
OCD	Office of Civil Defense
OPA	Office of Price Administration
OR	Operations Research
OSRD	Office of Scientific Research and Development
OSS	Office of Strategic Services
OSW	Office, Secretary of War
RAF	Royal Air Force
R.E. 8	Research and Experiments Department 8, Ministry of Home Security
SHAEF	Supreme Headquarters Allied Expeditionary Forces
USA	U. S. Army
USAAF	U. S. Army Air Forces
USAF	U. S. Air Force
USMC	U. S. Marine Corps
USN	U. S. Navy
USNR	U. S. Naval Reserve
USPHS	U. S. Public Health Service
USSBS	U. S. Strategic Bombing Survey
USSTAF	U. S. Strategic Air Forces
WDGS	War Department General Staff
WPB	War Production Board
WPD	War Plans Division

PREFACE

Let no one pity a man who devotes himself to studies apparently so dry. . . . It is true that the companions of his solitary hours are but lifeless paper, but they are the remnants of the life of past ages. . . . For me (in a preface an author is bound to speak of himself—a subject he elsewhere gladly avoids) they had a peculiar interest.

Leopold von Ranke,
in the Preface to his
History of the Reformation in Germany

Anyone undertaking to compile a history of this sort owes it to his readers to explain at the outset why, for him, “studies apparently so dry . . . had a peculiar interest.” In my own case, an awareness of the United States Strategic Bombing Survey dates back to 1964 when I first came across its reports while teaching military history at the Air Force Academy in Colorado. A perfunctory library search revealed the availability of the majority of reports in the Academy library. But I could find nothing that told me how, why, and when the Survey was set in motion; who the people were who made it up; what attitudes and ideals those people brought to their task; and, most important, how agreement was reached in what had obviously been one of the largest committee projects ever undertaken. True, most of the published reports contained a brief Foreword purporting to explain the origins and composition of the Survey, but the wording of the standard Foreword was in the style best described as transparent bureaucratised. “The United States Strategic Bombing Survey,” it began, “was established by the Secretary of War on

3 November 1944, pursuant to a directive from the late President Roosevelt."

"Was it really Roosevelt's idea?" I wondered. "If so, whatever made him think of it?" With these questions began a search that led from Colorado (and, later, Duke University) to the National Archives, the Library of Congress, the Army's Office of the Chief of Military History, and the Historical Archives of the Air Force at Maxwell Air Force Base in Alabama. Some knowledge of the internal history of the Survey, it became clear, was an obvious prerequisite to understanding and interpreting its published reports. Put briefly, the problem that came to hold my interest was simply this: if, as already seems to be the case, the reports of the Survey are to become the Domesday Book of the strategic bombing campaigns of World War II, then the time has come to examine, in the case of the Survey, the very questions that have plagued Domesday Book interpreters for almost nine hundred years.

My initial goal was appropriately humble: to compile, along historical lines, a "Guidebook to the Strategic Bombing Survey." If successful, the result could prove a valuable tool for historians using the published reports. In progressing, however, it soon became apparent that the Survey could hardly be explained in a vacuum; not only *how* its members measured but *what* it was they were measuring had to be explained. It was in seeking to answer the second question that the narrative took on two additional, but subordinate, themes: the rise and decline of the theory of high altitude precision bombardment of carefully selected targets; and the degree to which the Survey's deliberations were affected by inter-service wrangling over the question of which of the armed services deserved the lion's share of the credit for winning the war. Hopefully, the interweaving of these three themes will provide some measure of enduring value to what might otherwise have remained a straightforward example of administrative history.

My obligations are many: to Theodore Ropp of Duke University, whose energetic self-restraint in the early stages of this undertaking leaves me awed even unto the present; to Colonel (USAF) Alfred F. Hurley, who never doubted; to archivists and librarians and former members of the Strategic Bombing Survey who were as patient as they were helpful; and to my colleagues at the Air Force Academy, both officers and cadets, who were willing to listen. I have a particular indebtedness to the following individuals, either for their

having granted me permission to use their papers or for having read or discussed with me early versions, whether in whole or in part, of the manuscript: the widow of the late General of the Army H. H. Arnold; the late General (USAF, Ret.) Carl A. Spaatz; Lieutenant General (USAF, Ret.) Ira C. Eaker; the late General (USAF, Ret.) C. P. Cabell; Major General (USAF, Ret.) Haywood S. Hansell, Jr.; Captain (USNR, Ret.) S. Paul Johnston; the widow of the late Major General (USAF, Ret.) Orvil A. Anderson; Major General (USAF, Ret.) Ramsay D. Potts, Jr.; Guido R. Perera; James B. Ames; Noble Frankland; Forrest C. Pogue; Maurice Matloff; Brigadier General (USAF) I. B. Holley, Jr.; Harold T. Parker; Stetson Conn; James A. Field; Philip A. Crowl; Robert F. Futrell; Wing Commander (RAF) R. A. Mason; James Lea Cate; Eugene M. Emme; Jerome K. Holloway; Robert A. Lovett; George W. Ball; Paul H. Nitze; J. Kenneth Galbraith; Lieutenant Colonel (USAF) Paul T. Ringenbach; Lieutenant Colonel (USAF) Alan L. Gropman; Lieutenant Colonel (USAF) Ronald R. Fogleman; Major (USAF) Timothy E. Kline; Brigadier General (USAF, Ret.) Frank B. Elliott; Colonel (USAF) John Schlicht; Colonel (USAF) Philip D. Caine; Lieutenant (USAF) James B. Smith; Captain (USAF) Philip D. Meilinger; Cadet First Class (USAF Cadet Wing) Richard W. Tobin; and Lieutenant Colonel (USAF, Ret.) Monte D. Wright, without whose patient help the first cut might have remained just that.

John E. Taylor at the National Archives rendered every possible assistance in Washington, as did Miss Marguerite Kennedy at the Air Force Archives at Maxwell Air Force Base in Alabama. At the Air Force Academy Library in Colorado Springs, Mr. Donald J. Barrett, Miss Betsy Coxe, and Mrs. Betty Fogler put up with requests ranging from the reasonable to the ridiculous. Frederick E. Seiler and Ralph Carlson of Garland Publishing, Inc., got the project off the back burner in the summer of 1975. Finally, George B. Cooper of Trinity College and Franklin LeVan Baumer of Yale University played a bigger part in all this than they probably know.

And then there were my children, Donna, Paul, Pamela, and Patrick—whose patience is unending—and my wife, Charlotte—whose name belongs on every page.

D.M.
Newport, Rhode Island
November 1975

CHAPTER ONE

ALL THE WINDS OF DOCTRINE

Though all the winds of doctrine were let loose to play upon the earth, so Truth be in the field, we do ingloriously by licensing and prohibiting to misdoubt her strength. Let her and falsehood grapple: who ever knew Truth put to the worse in a free and open encounter?

John Milton, *Areopagitica*

Autumn 1944, the eighteenth of October. Early in the afternoon, glancing from the window of his office on Broad Street in Newark, Franklin D'Olier could see that the weather report had been correct for once: clear skies with moderate winds, temperatures in the high sixties and lower seventies. Mr. D'Olier was sixty-seven years old and president of The Prudential Insurance Company of America. Born in Burlington, New Jersey, on 28 April 1877, he had been graduated from Princeton in 1898 and now, having achieved remarkable success in the business world,¹ he could count among his honors that of being a Trustee of his *alma mater*. What might he have been thinking of when his secretary informed him that General "Hap" Arnold, commanding general of the Army Air Forces, would like to talk with him on the phone?

If he had found time to look through *The New York Times* that morning, he would have had to go beyond page three to find news of anything save the war. Banner headlines proclaimed "Japanese Fleet Flees at Sight of U.S. Force; Americans Mop Up Aachen." Further down the page glowing reports of the Russian drive towards Germany from the east competed for attention with a report that "1300 U.S. Bombers Smash at Cologne," dropping 4,000 tons of missiles. After

nearly three years of worry and frustration, Americans were in a buoyant mood. The war was going well, and if the boys wouldn't be home by Christmas, that in itself was no reason not to hope for Easter. Although FDR's fourth campaign was approaching a climax, politics took second place in the American mind to the progress of the war. Optimism was the order of the day,² so much so that some feared the consequences of a general letdown in enthusiasm and effort. Appearing with the President in Omaha the evening before, at the national convention of American War Dads, Captain Eddie Rickenbacker warned that "one of the greatest underlying menaces of the moment with respect to maintaining the high pressure of our war effort is too much optimism." He warned that "swivel chair strategists" and "typewriter tacticians" were "threatening the backbone of our will to sustain the war effort . . . with their twaddle about the early conclusion of the war."

Perhaps Mr. D'Olier noticed this report, appearing as it did close by extensive coverage of Wendell L. Willkie's funeral in Rushville, Indiana. War was not new to Mr. D'Olier, who had been commissioned a captain in the Field Artillery in 1917 and had accompanied the A. E. F. to France where he had organized the A. E. F. Salvage Service. Discharged in 1919 as a lieutenant colonel of the General Staff Corps, he had been decorated with the Distinguished Service Medal and the Cross of Commander in the French Legion of Honor. That same year he was elected the first national commander of the American Legion. And now, in this morbid extension of the Great War, he was himself a "War Dad," his son serving as a major in the Army Air Forces.

After an exchange of pleasantries, General Arnold, addressing Mr. D'Olier as "Colonel," got down to business. The general explained to Mr. D'Olier that he had a job for him to do, a very important job, one of such consequence that the future not only of the Air Forces but also of the nation's entire postwar defense policy might be affected by its outcome. Explaining that the matter was not one he could discuss over the telephone, General Arnold asked if Mr. D'Olier could possibly arrange to receive his personal emissary the following day. Perhaps stunned, perhaps only intrigued, but certainly not feeling himself at this stage in any position to say no, Mr. D'Olier agreed to do so.

Early in the afternoon of the following day Colonel Bradley J. Gaylord,³ a former business associate of Mr. D'Olier now serving

with the Army Air Forces, presented himself at D'Olier's office in Newark. With him he carried a letter from General Arnold that explained in broad, general terms the nature of the "tough job" General Arnold had in mind.⁴ Briefly, the letter advised "Colonel D'Olier" that the President had suggested to the secretary of war the need for a comprehensive survey of the effects of the strategic bombing offensive against Germany. Such a study, the letter went on, would have a considerable influence, not only on the future of the military establishment, but also on the planning of future factories, industrial establishments, and even cities. After mentioning that "Mr. [Robert A.] Lovett [assistant secretary of war for air] and I feel that you have the necessary qualifications to head this survey as Chairman," General Arnold concluded with the hope that Mr. D'Olier might find it possible to take on the task "not only as a national service but as a benefit for the Army Air Forces, so that we can be prepared for the future." Attached to this letter was a photostatic copy of an earlier letter from President Roosevelt to Secretary of War Stimson.⁵

After a brief discussion with Colonel Gaylord, Mr. D'Olier spent Thursday evening and Friday morning considering the offer and conferring with his family and business associates. Then at noon on Friday he telephoned Colonel Gaylord, who had returned to Washington, to arrange a meeting with General Arnold. At the colonel's suggestion, Mr. D'Olier agreed to take the afternoon train to Washington where he would meet Colonel Gaylord at the Mayflower Hotel at 7:00 that evening, a conference with General Arnold and Assistant Secretary Lovett having been arranged for Saturday morning.

What might have gone through Mr. D'Olier's mind while on the train to Washington is lost to history. But whatever it might have been, and it certainly involved wondering about the immediate future, we can certainly hope it did not involve plans for the forthcoming Thanksgiving Day; as matters were to turn out, Mr. D'Olier's dinner that day would consist of a Spam sandwich, a cup of coffee, and doughnuts at an airstrip near Rome. How Mr. D'Olier came to be considered for the task that lay ahead, how the task itself was identified—these are the basic questions to which these opening chapters will address themselves.

The Origins of "Strategic Bombing"⁶

When Franklin D'Olier was asked to assume the chairmanship of a select committee that would seek to evaluate the effects of strategic bombing in Europe, the Army Air Forces had been flying bombing missions over Europe for just over two years. Yet when twelve B-17s of the Eighth Air Force attacked Rouen on 17 August 1942, this marked the beginning⁷ of a strategic air war that had conceptual roots running at least as far back as H. G. Wells's *War in the Air*.⁸

In its infancy in World War I, military aviation played an occasionally spectacular, increasingly important, yet largely unessential part.⁹ Yet during the war virtually every theory, attitude, ideal, hope, and debate that was to mark the course of air warfare a quarter of a century later was foreshadowed. The German air offensive against Great Britain beginning in 1915, and the creation of the Royal Air Force and of its Independent [Bombing] Force in 1918, were each, in the most literal sense, epochal events.¹⁰

World War I did not produce agreement as to the best employment of aircraft in battle; it merely provided material for the continuing controversy. "They should serve as extensions of the eyes of the ground commander," said some. And this, indeed, was the function assigned to them at the beginning; but it was not the sole function long. Technological improvements led to further experiments and soon there were ground commanders who envisaged the best use of aircraft to be that of acting as a sort of mobile artillery, applied directly in support of ground armies. By war's end, spurred on largely by the German example, a third vision arose—that of an air force operating independently of armies and navies. The task of such a force would be to attack the enemy at places far removed from the battle lines, the purpose being to destroy essential elements of the enemy's war capability by bombing his factories, his transportation and supply depots, and his centers of government. The Smuts Memorandum of 17 August 1917, the paper that led directly to the creation of the Royal Air Force, discussed air warfare in these terms:

As far as can at present be foreseen there is absolutely no limit to the scale of its future independent war use. And the day may not be far off when aerial operations with their devastation of enemy lands and destruction of industrial and populous centres on a vast scale may become the principal operations of war, to which the older forms of military and naval operations may become secondary and subordinate.¹¹

Thus, assuming little or no opposition from enemy aircraft, three roles that aircraft might play in warfare were identified: Observation (or reconnaissance), Attack (in the sense of tactical ground support), and Strategic (or independent). The reality of an enemy also armed with aircraft produced still another role, that of a Pursuit (or fighter) capability whereby the enemy's aircraft might be destroyed in the air.¹²

In the decade following the war the pace of technological development slowed while theoretical speculation continued apace. In Great Britain the RAF, fighting for its institutional life, experimented with the concept of "air control" in which means were sought to apply military aircraft to the policing functions of the Empire. In the United States the Army's Air Service, led on by the exploits of Brigadier General Billy Mitchell and the hopes and dreams of a few aircraft manufacturers, began its long battle to achieve institutional parity with the Army and Navy.¹³ The apparently logical path to such an achievement lay in the direction of identifying, seizing upon, and exploiting a unique "role" or "mission" that air forces *alone* could apply in warfare. If that could be achieved, if a powerful case could be made for the efficacy of the "third dimension to warfare," then a third service might well follow.

As time passed some of the airmen, not unlike other visionaries, gave their own meaning to certain words; two of these, "strategic" and "independent," require explanation. The general tendency that developed was to use these words to mean virtually the same thing, bombing operations conducted independently of surface forces, whether on land or sea. When used in a technical sense, to be sure, "strategic bombing" was identified as that directed against the sustaining resources of an enemy's war capability. But from the beginning—and, indeed, ever since—critics have pointed out that bombing missions designed to assist the advance of surface forces have as much right to be called "strategic" as any other type of bombing operations. No easy solution to this semantic difficulty has appeared. The innovators among the airmen, convinced that they had at hand a new way of waging war, needed to call it something and they chose the term "strategic bombing." They might have called it something else, but to what purpose?

The airmen might, for example, have chosen to distinguish between "strategic military bombing" (in support of the ground battle) and "strategic economic bombing." Doing so, however, could only have

reduced the force of the argument in favor of "independent" operations. The choices (if, indeed, they were so considered) lay between strategic bombing, independent bombing, and economic bombing. What Samuel Huntington calls "the military ethic" would militate against any highlighting of the word "independent," connoting as it does any number of notions not likely to win favor with the "military mind," however defined; to have highlighted the word "economic" would have been to bring out in the open the essential conflict between the views of the airmen and those of the Army general staff, the latter holding as their "First Commandment" that the route to military victory lay in the defeat of the enemy armed forces in battle. Finally, by calling it "strategic" bombing the airmen implied that the provision for such operations was entitled to a place of its own in the formulation of basic war strategy.

Hence, strategic bombing¹⁴ (or bombardment) became the term commonly applied by airmen to designate long-range bombing operations. Under this generous mantle they would later find it possible to include many types of missions, including those flown in direct support of ground armies. But for the period between the wars, the chosen term served the important purpose of suggesting the gains that might be achieved by long-range operations conducted independently of the ground battle. In this way, with perseverance and luck, a persuasive case might be made for placing the control and direction of such operations outside existing service parameters. There can be no gainsaying, as well, that those who believed a new element had been added to warfare were also convinced, and with good reason, that this element could be developed best in an atmosphere untrammelled by devotion to traditions and command arrangements dating back at least to the nineteenth century.

It would be wrong, however, to conclude that the drive toward institutional autonomy was the only, or necessarily the primary, driving force behind the vision of Mitchell and his followers. On the contrary, the principal emotional stimulus was a sincere, if largely intuitive, conviction that the "warfare of the past" was just that—that the warfare of the future would be dominated from the air. Accepting this as given, those in a position to do something about it were then duty bound to find the ways and means of assuring that if war came, the United States would be prepared to wage and win the war in the air. Like most revolutions in thought, that fostered by the military aviators between the wars far outpaced in vision the means by which it

could be carried into effect. Yet when the War Department authorized the establishment of eleven special service schools for the Air Service in February 1920, the door was wedged open and in the room beyond lay opportunity.

Among the schools created in 1920 was the Air Service Tactical School at Langley Field in Virginia. From a rude and makeshift beginning this school, in the persons of its instructors and students, was to mold a theory for the employment of air forces in war that would be tested all too soon. Throughout its history, the curriculum at the Air Corps Tactical School¹⁵ covered all aspects of aerial tactics and strategy. But beginning around 1926 and rapidly accelerating after 1932, the strategic role of air forces emerged as the dominant theme. The reason was not simply that the strategic role offered the best possibilities for an independent mission; also relevant, and perhaps equally so, was the trend of technological advance in aircraft. With the appearance of the B-9 and B-10 in the early thirties and with the first flight of the experimental B-17 in July 1935, the means to apply what had hitherto been only a theory seemed at hand. And reinforcing the dreams of the strategic air theorists was the then apparent impossibility of building a pursuit aircraft¹⁶ that could match in speed, range, or altitude the multi-engined bomber. With the addition of a means, the B-17, to a goal, independent operations, there remained to be worked out a precise "theory of employment" by which the goal might be attained. As frequently happens in an era of rapid technological change, both the innovators and the apparent trend in technology emphasized the need to concentrate on *offensive* capabilities.

By 1939 a theory of employment had been derived.¹⁷ In brief it may be described as follows: the most efficient way to defeat an enemy is to destroy, by means of bombardment from the air, his war-making capacity; the means to this end is to identify by scientific analysis those particular elements of his war potential the elimination of which will cripple either his war machine or his will to continue the conflict; these elements having been identified, they should be attacked by large masses of bombardment aircraft flying in formation, at high altitude, in daylight, and equipped with precision bombsights that will make possible the positive identification and destruction of "pin-point" targets; finally, such bombing missions having been carried out, the enemy, regardless of his strength in armies and navies, will lack the means to support continued military action. Unhappily for

the historian this theory of war strategy cannot be attributed to any one person or even any single group of persons, nor to any one nation or any single decade. Yet while the complexity of its evolution may befuddle the most earnest researcher, some of the highlights, at least, must be mentioned.¹⁸

Building upon the experience of World War I, the Italian General Giulio Douhet published his *Command of the Air* in 1921.¹⁹ Unlike Mitchell, whose aim was to stimulate the development of *all* aspects of the military air potential, Douhet set his sights squarely on the strategic role of bombardment aircraft. In briefest compass, his view of future strategy was that a nation should resist on the ground while it massed for an offensive in the air. While recognizing the importance of target selection, Douhet nonetheless devoted few lines to this crucial question, owing probably to his inherent assumption that both incendiary bombs and others containing poison gas would complement the effects of high explosive weapons. For Douhet, all aircraft types other than bombers were ancillary, nice to have in certain circumstances, perhaps, but of a distinctly lower order of importance. Victory would be brought about by masses of heavy bombers destroying the enemy air force on the ground and continuing on to devastate his cities and industries.

The degree to which Douhet's theories influenced the instructors at the Air Corps Tactical School is, and seems destined to remain, a matter of conjecture. But it is known that an English translation of his book was available there as early as 1923.²⁰ When one compares the fully-developed American theory of the late thirties with that of Douhet, however, it appears certain that whatever influence he had was inspirational more than anything else.²¹ What clearly distinguishes the theory evolved at the Tactical School was the emphasis placed on the question of target selection.

Beginning about 1932, perhaps because they found it impossible to envisage bomber fleets of the size implied by Douhet, some instructors at the Tactical School began to wonder whether it might be possible, through careful, scientific study of a nation's industry, to single out particular targets whose destruction would of itself bring to a halt an entire industry or series of industries. If a number of such targets could be identified and destroyed, it might just be possible, with a relatively small force, to bring an enemy's war production to a halt with almost surgical precision. Accordingly informal studies were set in motion, using the United States as a test case, to determine the

degree of industrial concentration, the component parts of various industries, the relative importance of each of the parts, and the vulnerability to air attack of what appeared to be the most critical elements.²²

Identifying targets was one thing; hitting them from the air was something else. Yet technology, at least for the optimists, seemed to be keeping pace. The B-17 had range, speed, altitude, and bomb-carrying capacity that was considered equal to the task.²³ And when orders were placed for improved models of the Sperry bombsight and for the new Norden Mark XV bombsight (both in 1933), it appeared likely that the day might not be far off when a fleet of perhaps one hundred B-17s could take off from some friendly base (perhaps in England), fly at high altitudes (perhaps 25,000 feet, the purpose being to get above enemy anti-aircraft guns and defensive fighters) for several hundred miles, and arrive over a carefully chosen enemy target. There, grouped together in a large formation (to multiply both the amount of force delivered on the target and the defensive firepower, if needed, of the bombers' guns), they would carefully "sight in" the target (with the new bombsights), trigger their bomb loads, and then return several hundred miles to their base. Behind them they would leave a badly crippled, if not devastated, industry (actually only one factory, perhaps, but so chosen that its destruction must inevitably cripple an entire industry). The question of whether such attacks would take place at night or in daylight was decided for the latter on the basis of the improved accuracy to be expected. The question whether the bomber fleet should be escorted to the target by fighter aircraft was decided in the negative primarily for the reason that no such aircraft of sufficient range existed.

Such, in rough and perhaps ungenerous outline, was the theory of "daylight, high altitude, precision bombardment of selected targets" that the Army Air Forces brought with them into World War II. As Mr. D'Olier and his associates were to discover—indeed, as its very progenitors were to discover—this theory, constructed without conscious precedents in the peacetime vacuum, contained some assumptions that failed to prove out. Some of these were discussed in 1951 by Major General Haywood S. Hansell, Jr., who had been a bombardment instructor at the Tactical School.

The fanatical belief of the bombers in their own defensive fire power was not so much a choice and election to operate unescorted as it was a conclusion that fighters could not be built

with sufficient range to accompany them. The Pursuit Section, on the other hand, wanted no part of the escorting problem. They just as fanatically contended that fighters should be built purely and solely for operation in anti-aircraft defense. . . . We had a tendency to build our doctrine around the drawing board designs and the expected performance of aircraft still in the design stage. On this basis we unquestionably magnified our expected capabilities and minimized our limitations. . . . Our doctrine held that bombers in proper formation could conduct a running fire fight and preserve themselves against fighter attacks. Unquestionably this was based on hope and not on existing fact. . . . In the period before the war our lack of experience led us to be far too optimistic in gauging the number of bombs and the number of trials it would take to destroy a target.²⁴

Reflecting the absence of an outside umpire, someone who might have been able to identify and prevent such errors, the bombardment theory evolved at the Tactical School contained shortcomings that will be brought out in later chapters. For the moment, however, it is necessary to consider how this theory, evolving into a doctrine, came to be incorporated in America's basic war strategy, and how it fared in its initial test.

Strategy Finds a Place for Air

With the outbreak of war in Europe in 1939, the military and naval staffs in Washington began to prepare for the possibility of the United States' becoming involved. Numbers of Air Corps officers, drawn from various specialties, were sent over to Great Britain to spend months observing and studying the Royal Air Force. Into Washington from outlying billets came many of the brightest, most energetic officers of each service. Ranking officers of long and faithful (if often pedestrian) service were cut from the ranks with what, to some of them, appeared all but ruthless abandon. The fledgling Army Air Corps, still looked upon by the War Department General Staff (WDGS) as a vexing, presumptuous stepchild overly fond of going outside the family for sympathy and assistance, soon found that it had important friends in high places.

Whether they intended it or not, the two men who did most to assure a significant role for air forces in the approaching war were President Franklin D. Roosevelt and General George C. Marshall, the Army chief of staff.²⁵ Working closely with both of them was

Lieutenant General H. H. "Hap" Arnold, chief of the Air Corps and, after March of 1942, commanding general, Army Air Forces. As early as November 1938 the President asked the War Department to prepare a program for an Air Corps of 10,000 planes. In a special message to Congress in January 1939 he decried the state of our "utterly inadequate" air forces and begged further expenditures from a reluctant Congress. Until well into the war the President continued to set "impossible" goals for aircraft production, raising his sights from 10,000 planes a year to 50,000 and finally to 100,000. To be sure, "FDR and Marshall did not just pull these numbers out of the air. Arnold played a major role in setting these goals and probably had an indirect inspirational role with FDR as well as coming up with figures when appropriate."²⁶

The forced expansion of the aircraft industry served many purposes. In the first place, Great Britain was already engaged in an air war with Germany and the most immediate assistance the U.S. could render was in the form of equipment (aircraft, ships, etc.) rather than men.²⁷ In the second place, a fleet of bombers stationed in England might provide a capability, should war, in fact, come, of striking quickly at Germany. Whether the President, after the fashion of Winston Churchill, actively sought such an option is open to question. But down at the working level in the planning offices of the Air Corps, "the word from the top" was that the President was "open to suggestion."²⁸

Like the President, George C. Marshall could find many reasons actively to encourage the creation of a viable air force. If his armies should, in fact, have to come to grips with the *Wehrmacht*, their fate would be sealed unless there were a force able to deal with the by then world-famous *Luftwaffe*. The immediate problem of bolstering the defense of the Philippine Islands led him by 1941 to adopt an earlier Navy view that a buildup of air power in the Philippines might deter Japanese aggression in the Far East. Also relevant was his awareness, from the very beginning of any talk about invading the European continent, that any landing on the shores of Europe was unthinkable in the absence of assured air superiority over the point of assault. For these and many other reasons, the occasionally bitter wrangling between soldiers and airmen that had marked much of the inter-war period was laid to rest . . . for a season.

Thus encouraged from above, the Army Air Corps planning staff set to work in the summer of 1941 to create an overall plan for the

employment of strategic air forces in the European war. The immediate occasion of their doing so was a request from the President in July, addressed to the secretaries of war and navy, to prepare an estimate of the "overall production requirements required to defeat our potential enemies." Although the request was intended to produce a basis for planning munitions production, a group of brilliant young officers in the Air War Plans Division, all former instructors at the Tactical School, saw in it an opportunity to present a full-blown plan for a strategic air offensive. Known as AWPDP-1, this plan postulated that the major contribution of the Army Air Forces would be a strategic bombing offensive designed so to weaken Germany's war-making capability that an invasion, if necessary, could be accomplished. To do so would require an immediate start, the creation of 239 combat groups, and the provision of 63,467 aircraft and 2,164,916 men. Given such emphasis and resources, reasoned the planners, such an air offensive could reach full strength by April 1944. The plan recommended that the primary target objectives be Germany's electrical power grid, transportation network, and petroleum industry.²⁹

A Brief Sketch of Operations Over Europe Through Spring 1944

Less than three months after the presentation of AWPDP-1 the United States found itself at war with Germany. In the hectic months that followed, the AAF worked night and day to organize, train, and equip a strategic bombing force that could begin operations from bases literally thrown together in England.³⁰ From the outset the American commanders were beseeched by their Royal Air Force counterparts to set aside, as unworkable, their theory of daylight bombing. The British had started out with a theory of employment remarkably similar to that derived at the Air Corps Tactical School. They had quickly found, however, that once their bombers ventured beyond the range of fighter escort the rate of loss inflicted by the *Luftwaffe* rose to unacceptable levels. Worse yet, the British experience with so-called precision bombing had failed miserably, many crews having missed their intended targets by distances up to five miles and more. In an effort to reduce losses to the *Luftwaffe*, RAF Bomber Command had switched over from day to night operations. This changeover only further compounded the difficulties associated with finding and hitting precise targets. So, as a

result, Bomber Command had adopted the technique of aiming at target *areas*, principally cities geared to war production, hoping to maximize the effects—*whatever* effects—that their bombs might have. By mid-1942 it is fair to say that the operational goal of Bomber Command had become that of destroying the ability and will of German production workers to continue their war efforts.

It is important to remember that the British had been driven to adopt this technique by the operational limitations inherent in their equipment and prewar training. As early as July 1941 the chief of staff, Royal Air Force, had declared that "the most suitable target from the economic point of view is not worth pursuing unless it is tactically attainable." By 14 February 1942 a directive had been issued to Bomber Command to the effect that the primary object of the bombing campaign was to be the morale of the enemy civilian population, and, in particular, of the industrial workers. Eight days later, with the appointment of Air Marshal Sir Arthur Harris as commander of Bomber Command, the goal of "de-housing" the German industrial workers was effectively set in concrete for the remainder of the war.³¹

The American commanders were horrified at all this, not so much at the sequence of events that had been described, as at the conclusions that had been drawn. There must be a way, they felt, to apply force more selectively. One thing was certain, and that was that they were going to try, at least, to proceed according to their own theory of daylight, precision bombing. If circumstances should prove them wrong, they felt, change could always be introduced; but the idea of changing before they had even begun was anathema to the American commanders.

On 17 August 1942 twelve B-17s of the newly created Eighth Air Force launched the daylight bombing experiment. By late November some twenty-three attack missions had been flown, most of them against targets in France and Holland and in formations numbering less than thirty aircraft. Although encouraged at first by negligible air opposition from the German Air Force, the Operations Staff at Eighth Air Force soon felt the pangs of discouragement. Most of their crews had been sent overseas before their training had been completed in the States, the idea being to complete their training in England. But the autumn weather over England was less than cooperative and in the event most "training" had to be accomplished on actual bombing missions.³²

Perhaps most galling to those with high hopes for early success was the series of diversions, so-called, from the basic plan for the air attack on Germany, diversions demanded by the grand strategy established by the Combined Chiefs of Staff (CCS).^{*} The first of these was a bombing directive of 20 October 1942 naming as first priority for attack the submarine staging bases on the coast of France. This decision reflected the growing concern of the CCS over the outcome of the Battle of the Atlantic as well as a desire to offer additional protection for the shipping requirements needed to support the November landings in North Africa (Operation TORCH). Soon thereafter the two most proficient Bomb Groups of the Eighth Air Force were despatched to North Africa to support the surface operations aimed at dislodging Rommel from that continent. And back in Washington General Arnold was soon engaged in a battle of his own, this one with the Navy which sought to divert a larger share of heavy bomber production to the war in the Pacific (where, to the utter dismay of the airmen, the aircraft would be used primarily for long-range patrol and reconnaissance).

In January 1943 the Combined Chiefs of Staff met at Casablanca to determine an overall strategy for the defeat of Germany. Among the decisions confirmed at that conference was that an invasion of the western European continent could not be launched in force until at least the spring of 1944. At the same time it was determined that in order to prepare the way for such an invasion, the Eighth Air Force and the RAF should launch a sustained bomber offensive from bases in the United Kingdom. The ultimate objective of that offensive was stated to be "the progressive destruction and dislocation of the German military, industrial, and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened. This is construed as

^{*} "Diversions," like "strategic" as applied to bombing, is a potentially loaded word. In these pages it is used in the same sense that the bomber commanders used it during the war, *i.e.*, to denote any sort of bombing mission directed by higher authority that had the effect of diverting part of the strategic bomber force from the primary target systems that the bomber commanders considered most profitable. Confounding the problem was a lack of agreement among the bomber commanders; what was a "primary objective" to General Spaatz was more often than not a "diversion" in the eyes of Air Marshal Harris. For a discussion of such semantic difficulties as late as 1944, see Webster and Frankland, 3, 42-43.

meaning so weakened as to permit initiation of final combined operations on the Continent." The primary targets for the time being were listed in the following order of priority: (1) German submarine construction yards, (2) the German aircraft industry, (3) transportation, (4) oil plants, and (5) other targets in enemy war industry.³³

During the first half of 1943, the Eighth Air Force concentrated on the anti-submarine campaign,³⁴ its remaining efforts during the period appearing, in the words of the official history, "tentative, scattered, and light." The logistical and personnel build-up continued to be slower than hoped for, so much so that "combat crews saw in the statistics of attrition and replacement the likely prospect of a short career."³⁵ A few tentative raids were made into Germany, but these became increasingly expensive as the opposition increased, German air strength in the west being augmented by units moved to France and northern Germany from the Mediterranean and Russian fronts. As the numbers of German defensive aircraft increased so also did the skill of their pilots, and the early hopes that the B-17s and B-24s could operate beyond the range of fighter escort began severely to be questioned.

Growing concern over the German Air Force was reflected in the Combined Bomber Offensive Plan (C.B.O. Plan) promulgated by the Combined Chiefs of Staff on 14 May 1943.³⁶ This plan reflected the efforts of the Committee of Operations Analysts (COA) and General Arnold's Advisory Council, both in Washington,³⁷ and the RAF, the British Ministry of Economic Warfare, and Eighth Air Force leaders in England. Based on the most thorough analysis yet made of vulnerable targets in Germany, it identified six systems comprising seventy-six precision targets. The six systems were: (1) submarine construction yards and bases,³⁸ (2) the German aircraft industry, (3) ball bearing manufacture,³⁹ (4) oil production, (5) synthetic rubber and tires, and (6) military transport vehicle production. However, while these six systems were listed as the "principal objectives," one overriding "intermediate objective" was stipulated; this was the German Air Force, particularly its fighter strength.

*If the growth of the German fighter strength is not arrested quickly, it may become literally impossible to carry out the destruction planned and thus to create the conditions necessary for ultimate decisive action by our combined forces on the Continent.*⁴⁰

The worst fears of the planners materialized during the summer and autumn of 1943. Growing in strength, the Eighth Air Force launched a series of attacks, many of them in formations numbering upwards of two hundred aircraft each, against targets specified in the C.B.O. Plan. But once beyond the range of their fighter escorts, and this meant whenever they penetrated German air space, the bombers suffered severe losses. In August a double mission was launched against the ball bearing plants at Schweinfurt and the Messerschmidt aircraft complex at Regensburg. Of 376 B-17s despatched, 315 found their targets and attacked; but in the ensuing air battles, sixty of the bombers were shot down—a loss of 16 percent of those despatched and 19 percent of those attacking. Worse was to come.

During the second week of October the Eighth launched four major efforts against targets deep inside Germany. On the last of these, on 14 October against Schweinfurt, the force penetrated into Germany well beyond the range of the then available escort fighters. Here was the test of a theory; even the selection of the target reflected the long held hope of destroying a particular element of industry whose loss would result in a "bottleneck" in production. The *Luftwaffe* rose in defense and of the 291 bombers despatched, sixty failed to return, seventeen suffered major damage, and 121 sustained reparable damage. Although the attack got through to the target and caused considerable damage, such a rate of loss by the attacking force could not be consistently borne. Clearly, until the German fighters were driven from the skies, a new technique was necessary.⁴¹

From November 1943 through the third week in February 1944, the principal ally of the German Air Force—foul weather—became the dominating factor in the air war. Throughout the entire period there were less than half a dozen days on which the weather permitted visual bombing over Germany.⁴² In the interim, experiments were begun with radar-aided bombing techniques (to make it possible to bomb through cloud cover) and a thorough reorganization of the strategic air forces was accomplished. On 1 November 1943 the Fifteenth Air Force was established under Major General Nathan F. Twining, and by December it had moved into place with its headquarters at Bari, Italy, and most of its bombers in a complex of bases around Foggia. Early in January Lieutenant General Ira C. Eaker, who had commanded the Eighth's bomber forces in England, went to Italy to take command of the Mediterranean Allied Air Forces (MAAF), headquarters at Caserta. (Eaker was replaced at Eighth Air Force by

Major General James E. Doolittle.) Among Eaker's new responsibilities was general supervision of the activities of the new Fifteenth Air Force. But to coordinate the operations of the Eighth and the Fifteenth, a new headquarters was established in London, the command being given to Lieutenant General Carl A. Spaatz, who had been General Eisenhower's air deputy in North Africa. The new command, christened United States Strategic Air Forces (USSTAF), was made responsible for the overall direction of the American strategic air effort in Europe. While these changes were taking place the bomber force, in effect, stood down, waiting for the weather to break and for the arrival in mass of the long-awaited long range escort fighters. During this same period, RAF Bomber Command launched its ill-fated night bombing offensive against Berlin,⁴³ an offensive in which the loss rates paralleled those of the Americans in the months leading up to October 1943. As 1943 turned into 1944 it had become abundantly clear that success over the *Luftwaffe* in the battle of the air was the necessary prerequisite for the success of *any* bombing offensive, however conceived and executed. For the Allied bombing effort, the moment of crisis had arrived.

Despite the assumptions of the Air Corps Tactical School in the thirties that long range escort was probably not feasible, the authors of AWPD-1 had urged its development as at least an insurance factor. And although work was intensified on the problem at Wright Field (Dayton, Ohio) in 1942, it was late in 1943 before such aircraft began to arrive in England.⁴⁴ The eventual answer to the problem was the P-51 "Mustang," but improvements on the P-47 "Thunderbolt" late in 1943—essentially the addition of jettisonable fuel tanks—gave promise of greatly increased range. When first employed, however, the effectiveness of the new escort fighters was hampered by the tactical decision that they should do exactly what their name implied; that is, they were to escort, convoy one might say, the bombers to the target, operating offensively only to drive off attacking enemy aircraft. This pleased the harried bomber pilots no end—the sight of friendly fighters flying alongside over enemy territory was an agreeable novelty—but it frustrated the fighter pilots. They argued that they could be far more effective if most of them were allowed to break loose from the bomber formations and go over to the attack the instant that enemy fighters were sighted in any quadrant—indeed, if a fair proportion of them were allowed to precede the bomber formations in a coordinated series of fighter sweeps. As events were to show,

the fighter pilots were correct, and before the next large-scale bombing efforts were launched into Germany they were given the freedom they had long sought.⁴⁵ General Spaatz had determined to force the battle in the air; that decision spelt the death knell of the *Luftwaffe*.

"At long last," says the official history, on 19 February 1944 the weather opened up over Germany and a concerted attack against the German aircraft industry was launched. Running daily through 25 February, the series of attacks involved over 3,300 bombers of the Eighth and more than 500 of the Fifteenth. Almost 10,000 tons of bombs were dropped, a scale of attack roughly equal to that of the Eighth Air Force during its entire first year of operations.⁴⁶ Enormously encouraged by the success of "Big Week," the air commanders could finally begin to hope that after all their trials and setbacks they had at last attained both the means and the technique to destroy from the air Germany's ability to carry on the war. But the weather over the target areas closed in again for a month, and when it cleared the control of the strategic air forces had passed to General Eisenhower, Supreme Commander, Allied Expeditionary Forces.

The planning for the assault on Normandy (Operation OVERLORD) dated back to the Casablanca Conference in January 1943. A part of this planning had always been the assumption that air forces would be employed in direct support of the landings. But in the early months of 1944 serious disagreements arose as to how best to provide air support to OVERLORD. Everyone (soldiers, sailors, airmen) agreed that the overriding goal of air operations was Allied air supremacy over the beachhead on D-Day and as long thereafter as necessary. Eisenhower's deputy (Air Chief Marshal Tedder), all the senior ground commanders, the commander-in-chief, Allied Expeditionary Air Forces (Air Chief Marshal Leigh-Mallory), and most—but not all—of the RAF staff insisted that the best way to bring this about would be for the air forces, beginning as early as 1 March 1944, progressively to destroy the railway network of northern France and the Low Countries. The idea was to create a "railway desert" that would prevent the enemy from moving his reserves into the assault area and generally from shifting troops and supplies behind his own lines. The targets would be marshalling yards, locomotive repair facilities, bridges, etc. Two important airmen, less well instructed in the strategical reason for the inability of the Allied Powers to penetrate the German lines between 1915 and 1917, did not agree.

Air Chief Marshal Sir Arthur Harris of RAF Bomber Command resented the basic idea of thus diverting his forces from their primary object. Accordingly, he argued that Bomber Command was simply not capable of effecting the degree of precision implied in the basic idea, a matter of some consequence since the bombs would be falling in France, Belgium, and Holland.

General Spaatz and his staff at USSTAF also did not agree, but for a decidedly different reason. They were convinced that the best way to assure air superiority was to defeat the German Air Force. In their eyes this could best be accomplished by attacking its fuel supply, especially the synthetic oil refineries. These targets, they reasoned, were far more important to the Germans than was the French railway system. Accordingly, it could be assumed that attacks launched against them would serve to flush the German Air Force and lead to a series of air battles that would greatly deplete its operational strength. They agreed that time was of the essence and that it would no longer serve to destroy aircraft factories; but an attack against aviation gasoline sources, leading inevitably to a contest with the front line German fighter strength, was seen as the most promising way to deplete the numbers of aircraft that might contest the landings. Also, by attacking into Germany the Allied air forces would require the Germans to hold back part of the fighter strength that might otherwise be deployed into northern France. Having at long last attained the means—the long range fighters—to force the air battle, Spaatz was adamant in pressing his views, forcing meeting after meeting in which acrimony, both stated and implied, reached hitherto unexampled heights.⁴⁷

After hearing the arguments of both sides, General Eisenhower decided the issue in favor of the "Rail Plan" rather than the "Oil Plan." This was hardly surprising in the circumstances. Whereas most of the invasion planners could visualize and calculate satisfactorily to themselves the effects, and particularly their presumed immediacy, of the railway attacks, it was not so easy to visualize the results of the oil attacks. This matter was decided in a series of meetings during February and March. The Combined Chiefs of Staff then confirmed their long-standing commitment to General Eisenhower that beginning on a date of his choosing and against targets of his selection, he would control the effort of all strategic and tactical air forces. This passage of control took effect at midnight on 13/14 April 1944.

It is at this point, where the most optimistic airmen in USSTAF thought they saw their most ambitious hopes and dreams go a'glimmering, that this narrative must pause. Precise mission statements to the contrary, there had been moments when some airmen had glimpsed the possibility of "victory through air power" alone. Such a victory had never been their assignment, but the line between hopes, dreams, and beliefs is often a thin one. Now the invasion would be launched with air forces playing only an "auxiliary" role; and making matters worse was a real fear that the selection of targets was such that the Allies would suffer unnecessary casualties in the attempt. While this bitter pill was being swallowed, both in Washington and London a definitive move was afoot that would lead to the creation of the United States Strategic Bombing Survey (USSBS). The London end of that move was being made partly by the leaders of the fight for the Oil Plan as against the Rail Plan. They saw here in a dramatic fashion the need for an authoritative, unbiased, factual analysis of bombing effects.⁴⁸

CHAPTER TWO

A QUESTION IS RAISED: "HOW EFFECTIVE IS BOMBING?"

Our engines threw against theirs, and theirs against ours; but never did I hear tell that ours had done very much damage.

John, Lord of Joinville,
describing a fight with the Saracens
in the Nile Delta, December 1249

On September 18th [1914] the first experiments with dropping bombs from the air were made by Major Musgrave. One bomb was dropped, and it exploded but not exactly where nor how it was expected to explode.

On October 7th [1914] a German left a card on us, *pour prendre conger*, from the air. He dropped a bomb on the Aerodrome. It fell in the field, on the opposite side of the road to where No. 5 Squadron were established. Theoretically, it was a beautiful shot, practically it hit a turnip. And this was to be the case with many bombing efforts in the future.

Maurice Baring, *R.F.C.H.Q.*,
1914-1918

When General Arnold asked Franklin D'Olier to take on the difficult task that the President had suggested to Secretary of War Stimson, he was taking the final step in a long process whose tangible roots can be traced back as far as early 1943. Far from being the President's suggestion, or Secretary Stimson's for that matter, the idea of conducting an evaluation of the bombing

offensive, or a "survey" as it came to be called, had evolved within the Army Air Forces. In its original form the idea was not at all unlike the normal military practice of conducting in-house appraisals of military operations, be they mock maneuvers in peacetime or combat operations in wartime. What was to distinguish the Strategic Bombing Survey from such customary "after action reports" was its evolution into a Presidential Commission possessed of extraordinary powers and directed by civilians rather than soldiers.¹

The original problem pointing up the need for some sort of inspection or evaluation of the bombing offensive was the awareness on the part of AAF planners that the enterprise in which they were about to engage was wholly new and without precedent, if not in a conceptual sense then certainly with respect to the scope and intensity of the planned campaign. Coupled with this awareness was another, rather more specific: the information available to guide the planners in the selection of target systems was utterly inadequate. Accordingly, from the very beginning of operations some means would have to be found to measure both the results achieved and the assumptions upon which plans had been drawn up. Unlike the ground soldiers, the air strategists would not be able to measure their effectiveness in terms of ground gained or lost; some other means would have to be found and it would have to be applied early if the fully developed campaign were to be based on more than theory existing in a bigamous relationship with untested assumptions and questionable analogies between discrete economic systems.

Once the expansion of the AAF had been set in motion and tentative approval given to the basic concept of waging a strategic bombing offensive, the major difficulty to be surmounted was that of determining upon some valid method for selecting targets. At the heart of the whole theory devised at the Air Corps Tactical School lay the assumption that within any national economic system there were certain connecting links which once destroyed would throw the entire system, or at least large parts of it, into chaos. It was in connection with attempts to identify such targets that the first recommendations emerged calling for a continuing evaluation of the effectiveness of air attack on enemy industrial and economic targets. A brief account of the early attempts to solve the target selection problem will make clear why such continuing evaluation was

deemed necessary.

The theory developed at the Air Corps Tactical School was based in part on studies of the industrial patterns within the United States. The assumption was that railway systems, electric power grids, and manufacturing processes in general would bear certain marked resemblances in any of the industrialized nations; if a particularly vulnerable element could be located within a complex in the United States, then it would probably follow that a similar vulnerability existed at roughly the same point in any given process or complex in other countries. But this method, based on conceptual analogy, could not be followed up in the absence of specific data. Soon after the War Department reorganization of March 1942, the new Headquarters Army Air Forces launched a concerted effort to gather information about the German economy. The designated office of responsibility for the AAF was the Target Information Section of the office of the Assistant Chief of Air Staff, Intelligence (AC/AS, Intelligence).

The Target Information Section was not entirely unprepared for its task. As far back as the spring of 1940 its organizational predecessor—the Intelligence Section of the Air Corps Information Division—had begun to compile "air intelligence" relating to the industrial structures of Germany, Italy, and Japan. From the very beginning ingenuity was the order of the day and among the "many devious channels through which this search led" were the vaults of certain New York banks where detail drawings of many German factories were found. Other sources of occasional value were the reports filed periodically by Air Corps officers who had served as assistant military attachés on the staffs of U.S. ambassadors in foreign capitals. Additionally, the officers of the Target Information Section began a program of collecting, sifting, and collating from books, newspapers, and periodicals data pertaining to the German economy. The assistance of other agencies with related interests was sought.²

Among the most helpful were the Military Intelligence Division, WDGS; the Research and Analysis Section of the Office of Strategic Services (OSS); and the Enemy Branch of the Board of Economic Warfare (later consolidated with other offices into the Foreign Economic Administration, FEA). Owing in part to relationships established with these organizations, the Target Information Section received a continuing flow of data from the British Ministry of

Economic Warfare (MEW) as well as from the British Air Ministry and the Intelligence staff of the RAF Bomber Command. But even as the sources and types of data expanded, further difficulties became apparent. Chief among these was the virtual absence from the staff of the Target Section of officers trained to interpret the information being accumulated. The man who not only recognized this difficulty but also set about resolving it was Major General Muir S. Fairchild, and it is for this reason among others that will appear later that he can be looked upon as the intellectual father of the Strategic Bombing Survey.

In 1935 "Santy" Fairchild was graduated from ACTS, returning as an instructor in 1937. Remaining until June of 1940, he rose to the position of Director, Department of Air Tactics and Strategy, and throughout his tour on the faculty was a recognized leader among those who developed the Tactical School's theory of strategic bombardment. A major general by 1942, Fairchild had served as Director of Military Requirements, overseeing the unprecedented expansion of the air forces. Late in that year Fairchild, along with an Army lieutenant general and a Navy vice admiral, was designated a member of the Joint Strategic Survey Committee (JSSC), an advisory board reporting directly to the JCS. It was designed to act mainly as a body of senior, experienced officers that could provide an overview to the major strategic problems facing the JCS. Its work could result either from its own initiatives or from matters referred to it. Even while so involved, Fairchild continued to maintain his interest in several technically unrelated problems, like that of resolving the target selection problem in some systematic manner.

AWPD-42, the Air Staff's most recent strategic plan, had been completed in September 1942. Although varying only in details from AWPD-1, the plan was severely criticized when presented to the Joint Intelligence Committee. Particularly questioned were the assumptions underlying the target recommendations contained in the plan. After pondering the problem at some length, General Fairchild paid a visit to the office of Colonel Byron E. Gates, Director of Management Control, early in December. In the course of his remarks Fairchild observed that

he was disturbed at the preparation and handling of air matters for presentation to the JCS and that it was inevitable, with the pressure of daily affairs, that officers holding responsible

positions . . . found themselves unable to give the amount of time to the research and analysis necessary to the . . . solution of strategic bombardment problems. He also pointed out that this type of activity was one for which a regular army career did not necessarily prepare an officer.³

Colonel Gates suggested that perhaps some assistance might be available from among the men then being recruited to man the operational research sections of the various overseas commands. Such men, civilians for the most part, had proved useful to the RAF in bringing to bear on critical tactical problems the special and presumably detached analytical skills of scientists, economists, and lawyers.⁴ Colonel Gates offered to General Fairchild the services of Major (later Colonel) W. Barton Leach⁵ who was in charge of organizing operations research for the AAF. In addition, Colonel Guido R. Perera⁶ of Gates's office was charged with setting up the organizational machinery that could be expected to produce a systematic analysis of target data. Out of this discussion emerged only one week later the quite remarkable *ad hoc* committee that came to be known as the Committee of Operations Analysts (COA).⁷

The work of the COA involved not only the analysis of all the target data already accumulated but also a search for previously untapped sources. Its various subcommittees called upon the services of economic and industrial experts throughout the United States. The composition of the main committee reflected the diversity of skills and backgrounds brought to the task. In addition to its military members,⁸ the committee included such men as the following: Edward Mead Earle,⁹ Edward S. Mason,¹⁰ Elihu Root, Jr.,¹¹ Fowler Hamilton,¹² Thomas W. Lamont,¹³ and Noel Frederick Hall.¹⁴ Beginning in December of 1942, the COA worked through the winter months, completing its report to General Arnold on 8 March 1943.

Of most importance to the present purpose is to note that when the COA submitted its report, its members, aware of the possible fallibility of some of their assumptions, included among their recommendations "that there should be continuing evaluation of the effectiveness of air attack on enemy industrial and economic objectives in all theaters."¹⁵ On several occasions during 1943 Colonels Perera and Leach, after consulting in England with General Eaker and representatives of the RAF, prepared interim reports purporting to represent such evaluations, but representing in

fact little more than summaries of the effort expended against various types of targets and assessments of the results based almost entirely on interpretations drawn from post-strike aerial photographs.¹⁶ Nevertheless, the germ of the idea had been planted—there was established, and there would continue to exist, a requirement for a continuing evaluation of the bomber offensive that would encompass both the assumptions underlying it and the results achieved by it. By the end of 1943 all that remained to be settled were some jurisdictional disagreements over which agency of the Air Staff should be responsible for the continuing assessment and what should be the scope of the evaluation.

The jurisdictional squabble between the Intelligence Division and the Plans Division was of the everyday variety. Intelligence, with its Target Information Section, needed information about results as a check on the data it was continuing to collect; Plans, with its responsibility for future operations, wanted to be assured that its recommendations for the future took into account the actual results of past operations. Complicating this minor squabble was the personal interest of the AC/AS, Plans, Major General Laurence S. Kuter, a former colleague of General Fairchild on the faculty at ACTS, a major contributor to the theory of strategic bombing, and one of the authors of AWPD-1.¹⁷ Upon the insistence of (now) Brigadier General Sorenson that the matter of evaluation was properly a responsibility of Intelligence, General Kuter let the matter drop temporarily, although he continued occasionally to call on Colonel Perera and other members of the COA for reports.¹⁸

Throughout the closing months of 1943 and the period of 1944 prior to "Big Week," the bomber offensive, as described earlier, had experienced its darkest hour. The problem had become less that of what targets to strike and more that of whether the means would be found to strike *any* in the context of acceptable air-to-air losses. But no sooner had optimism returned after "Big Week" than the question of evaluation was revived, exacerbated now in the minds of many by the question of how the bombers would be employed to support the coming assault on *Festung Europa*. In March of 1944, almost simultaneously at AAF Headquarters in Washington and USSTAF Headquarters in London, formal proposals were drawn up for a post-armistice evaluation of the bombing offensive. The Washington proposal emanated from AC/AS, Intelligence, and reflected the special interests of the Intelligence Division; the

London proposal, of greater long-range significance, derived from early informal conversations with General Fairchild.

The author of the proposal in Washington was Major Ralph A. Colbert, chief of the European branch of the Target Information Section.¹⁹ On 27 March Major Colbert prepared a memorandum addressed to Brigadier General Thomas D. White, who had recently succeeded General Sorenson as AC/AS, Intelligence. Reflecting some of the many special interests at stake, the memorandum began as follows:

1. Plans should be prepared now for the establishment of a Commission of experts, headed by USAAF Intelligence, prepared upon Germany's defeat to conduct an investigation inside Germany which will disclose the true facts concerning the Strategic Aerial Bombardment of Europe and, on the basis of such facts, to prepare a report analyzing the accomplishments and potentialities of Air Power as an independent instrument of military strategy.

2. Such a Commission, by firsthand investigation inside Germany, should develop the basic facts that will provide the answer to questions of vital importance, not only to the *future of the USAAF*, but to *National Security* and *World Peace* as well, such as:

a. To what extent was the original mission of the Combined Bomber Offensive . . . accomplished?

b. What would have been required to achieve complete victory through strategic bombing?

c. How can German experience be applied to the Strategic Bombardment of Japan?

d. What role should Air Power play in postwar National Defense and in policing the postwar world?

Colbert went on to suggest that the report of the Commission should cover: all phases of German war production and morale; the respective contributions of AAF precision bombing and RAF area bombing; and an analysis of the methods used by the target selection committees.

The facts should be investigated and the objective factual story of the first major test of the effectiveness of Strategic Bombard-

ment should be written by the organization primarily involved, the *USAAF* (under the direction of Assistant Chief of Air Staff, Intelligence), and *not* by the Ground Forces, OSS, FEA, or the British who will doubtless undertake a similar project the results of which will quite naturally reflect their viewpoint.

After discussing the matter with General White, Colbert prepared a slightly revised version for White's signature, addressed to General Arnold.²⁰ While this memorandum was in the commanding general's office awaiting his attention, another proposal was en route from General Spaatz in London.

General Spaatz's letter, though not mentioning him by name, had been inspired by much earlier conversations in Washington with General Fairchild. While occupying his position on the JSSC and maintaining his official office in the Combined Chiefs of Staff Building in Washington, General Fairchild had remained in close contact with AAF Headquarters. When visiting at the Pentagon he used a small, private office kept especially for him by the small coterie of officers who made up General Arnold's Advisory Council.²¹ There, on a number of occasions during 1943 and early 1944, General Fairchild discussed with those present the general progress of the bomber offensive and the need, as he saw it, to assure that however the air war might turn out the AAF had a responsibility, not only to itself but also to the public, to conduct a full-scale evaluation of its performance. Such a report, he was always careful to point out, should be drawn up with the advice and assistance of specially qualified civilian technical consultants, men who might need some help in understanding air strategy but who would know more about industry and economic management than most serving officers. The skills that could be brought to bear by civilians on supposedly "military" problems was a matter of particular and continuing interest to General Fairchild, as was shown in December of 1942 when he took the initial steps leading to the creation of the COA. He often remarked that the services were quite wrong to treat civilians "like firemen, calling on them only in an emergency and ignoring them the rest of the time."²²

Among the officers with whom General Fairchild discussed these matters were the four who made up the staff of the Advisory Council: Colonel C. P. Cabell, Colonel Jacob E. Smart (who had replaced Norstad), and Lieutenant Colonels James B. Ames and William A. McRae, Jr. By virtue of their aloofness from the

jurisdictions of the regular Air Staff, the members of the Advisory Council enjoyed a special relationship with Fairchild, who visited with them often. The detached viewpoint of the Advisory Council led its members, when discussing the question of postwar evaluations, "to concern themselves particularly with the broader aspects of the problem. Their principal interest was in the need for a careful assessment of the whole bomber offensive, essentially on the basis of the postwar necessity for an authoritative and unbiased answer to the inevitable question: 'Who won the war?'"²³

By March of 1944 two members of the Advisory Council had been reassigned overseas and were serving under General Spaatz at USSTAF Headquarters. Cabell,²⁴ now a brigadier general, had for several months commanded the Forty-fifth Heavy Bombardment Wing prior to becoming Spaatz's Director of Plans. Lieutenant Colonel Ames, whose special tact and analytical skills had resulted in his assignment to the Advisory Council,²⁵ had recently been appointed a special assistant to Major General Frederick L. Anderson²⁶ in the latter's dual capacity as USSTAF Deputy Commander for Operations and military air advisor to the European Advisory Commission.²⁷ Cabell and Ames, now together again, revived their interest in surveying the results of air operations, and concluded that they could give Fairchild's ideas an important impetus from the field. Ames made the proposal in a memorandum to General Anderson that the latter approved, discussed with General Spaatz, and asked Ames to revise into the form of a letter from General Spaatz to General Arnold. The resulting letter started a chain reaction of correspondence lasting six months and leading to the creation of the Strategic Bombing Survey.²⁸

CHAPTER THREE

AN IDEA IN SEARCH OF DEFINITION

I do believe you think what now you speak,
But what we do determine oft we break.
Purpose is but the slave of memory,
Of violent birth but poor validity;

.....
Our wills and fates do so contrary run
That our devices still are overthrown,
Our thoughts are ours, their ends none of our own.

Hamlet, Act III, Scene ii

Time dissipates to shining ether the solid angularity of facts.

Emerson, Epigraph to History

I often wish that I could rid the world of the tyranny of facts.
What are facts but compromises? A fact merely marks the point
where we have agreed to let investigation cease.

Bliss Carman

The letter signed by General Spaatz on 5 April 1944 began with some general comments about the desirability of conducting "an intensive survey in Germany and the occupied countries of the results achieved by the Combined Bomber Offensive." After offering some ideas as to the scope of such a survey, the letter went on:

I believe that this survey could best be handled by a small committee to include one or more senior Air Force officers with experience in the planning and execution of the Combined Bomber Offensive. This committee would be assisted by a group

of military and civilian experts in the various fields of German military, economic, and political life.

In order to guarantee that the report of this committee will be received as an unbiased and completely impartial study based solely on fact and not on opinion, careful consideration should be given to the selection of the head of this committee. It is suggested that some well-known American publisher, jurist, or university president, whose reputation for intelligence and impartiality is beyond reproach, might well be chosen for this post.

The letter urged that planning and organizing "cannot begin too soon" since the survey teams would have to be ready immediately the fighting ceased. After mentioning that pending a formal decision he would assign a few officers to "prepare groundwork for the activities of such a committee," General Spaatz concluded by suggesting the names of two persons who might be considered for the chairmanship of the committee, and solicited General Arnold's "reaction" to the proposal.¹

The following week Ames prepared another letter, this time for General Anderson's signature and addressed to General Fairchild in Washington. This letter, attached to which was a copy of the Spaatz-to-Arnold letter, brought General Fairchild up to date on what had occurred at USSTAF and asked for any additional suggestions "as to membership, functions, organization and sponsorship of the proposed committee." In an interesting paragraph General Anderson added some comments, probably at General Spaatz's suggestion, implying that the selection of a Chairman had been discussed at some length.

Since the date of General Spaatz's letter, it has occurred to us that someone like Mr. Lewis Douglas, former head of the War Shipping Administration and president of the New York Mutual Life Insurance Company, might be an even better choice to head the committee than any newspaper publisher we could think of, although Patterson or Sulzberger should certainly be acceptable if Douglas or someone like him is not available. The trouble with most newspaper publishers is that it is hard to convince the public that they are really independent thinkers. . . . Perhaps you will have an opportunity to advise General Arnold directly on these matters, and I certainly hope you will.²

While awaiting a reply from General Arnold, the small planning cadre at USSTAF settled down to the business of defining an approach to the problem. Colonel Ames was designated as the

project officer, and was joined occasionally by General Cabell, since 1 April Director of Plans, USSTAF. With the assistance of a few junior officers who could be spared from other duties, Ames began holding a series of conferences with members of numerous agencies in England that had contributed to the bombing offensive. In addition to the staffs at Eighth Air Force and USSTAF these included the British Air Ministry, the Economic Objectives Unit of the Economic Warfare Division in the U.S. Embassy (EOU/EWD),³ the London field office of OSRD,⁴ and the joint British-American bomb damage analysis project located at Princes Risborough and known as "R. E. 8."⁵ As a result of these conferences two things became evident: first, that an immense research task would be required before any survey teams could be sent into the field; second, that the other agencies, both British and American, had interests of their own that such a survey might serve.

There was much to be done to prepare for any such survey. For example, if the committee were to evaluate the bombing missions, then it would certainly need to know in advance what missions had been flown, when, against what targets, against what kinds of German opposition, in what weather conditions, with what types of bombs and fuzings, and with what apparent effect. The answers to all such questions could be found, to be sure, but not in one place and not in the format that the committee might want. Then lists would have to be drawn up of targets to be inspected by ground teams, German government agencies whose records the committee would need, and persons in Germany to be interrogated.⁶

Since it was initially assumed, "for planning purposes," that the survey would cover *all* aspects of the bombing offensive, almost anything that anyone could think of, in any way relating to the offensive, would be surveyed—physical destruction caused by bombs, criteria applied to select targets, effects of bombing on decisions taken by the German high command, effects of bombing on the morale of enemy troops and enemy workers, production setbacks attributable to bombing, *ad infinitum*. For this reason, and especially because it began to appear that the proposed committee would want to sequester virtually all German official documents that became available, the various agencies contacted for suggestions began to consider whether they should arrange for surveys of their own.⁷

That either his own command, USSTAF, or AAF Headquarters in

Washington should control or direct the proposed survey was never General Spaatz's design or intent.⁸ But that other, already existing "outside agencies," be they American or British, should obtain any degree of control was anathema to him from the start. Aware of the interest being shown by such agencies, and having as yet received no reply from General Arnold, Spaatz wrote again on 20 April. His object was to urge the importance of getting the project underway without delay and, if possible, approved by the President. "Otherwise we may find that some other organization has been authorized to do the job, and we will be left playing second fiddle." Since his original letter, he reported, "we have had reports that the Office of Scientific Research and Development (Dr. Vannevar Bush) may be interested in making such a survey themselves. There are also indications that O.S.S. may be contemplating a similar survey."⁹ Two days later Spaatz gave copies of both letters (5 and 20 April) to a senior member of his staff then on his way to Washington. Urging him to discuss the matter with General Arnold, Spaatz directed his envoy to emphasize "the importance we attach to setting this thing up as a completely independent American survey, staffed by American personnel from top to bottom."¹⁰

The British interest in the tentative American plans for a survey had become evident from the moment Colonel Ames began his series of impromptu conferences, the general idea advanced by the British being, "Why shouldn't a 'combined' bomber offensive be the subject of a combined survey?" In talking with Ames and later General Cabell, RAF officers pointed out that the British had been working on the problem of bomb damage assessment ever since the first German raids against England in 1940, that within their Ministry of Home Security and their special project (R. E. 8) out at Princes Risborough were a considerable number of people with several years experience at the task. But crucial to the question of cooperation on this matter were the differences in targeting theory that had come to mark the British and American approaches.

Starting out in 1940 with a theory of precision bombing remarkably similar to that evolved at ACTS, the RAF had found by cruel experience that unescorted day bombardment resulted in losses well above the level that could be absorbed. While switching over to night bombardment reduced losses, it also reduced accuracy, and so by 1942 the RAF Bomber Command had reached the point where it was flying night missions directed against target "areas"

with the avowed aim of destroying not so much particular factories as the supporting elements around important factories—in short, the homes of the factory workers.¹¹ When the Americans joined the bomber offensive in 1942, their British counterparts tried strenuously, if vainly, to convince them that the theory they brought with them would not work. But it took Schweinfurt to convince the Americans, and by the time they resumed the offensive in force in February of 1944 the problem of long-range escort had been solved. So the question had, in a way, become moot, but it had left some hard feelings behind, feelings that could only exacerbate the natural spirit of competition that could be presumed to exist between the RAF and USSTAF. And making matters worse for the idea of cooperation in a bombing survey was the battle of ideas being waged at this very moment over the RAF (and Eisenhower) Rail Plan and USSTAF's Oil Plan. Thoroughly convinced in his own mind that the British and all the Allied ground commanders were as wrong as wrong could be on this matter, General Spaatz was in no mood to look favorably upon a joint survey of a not-so-combined bomber offensive.

Before General Spaatz's follow-up letters of 20 and 22 April reached General Arnold, the latter had signed a reply to the original letter of 5 April. Stating that he considered the proposed survey "a splendid idea," the commanding general added:

Of particular interest to me would be some idea as to the most effective mixture of high explosives and incendiaries against heavily built-up areas. If possible, a specific comparison of some of our larger operations, together with our appreciation of their results, with the actual military, economic, and morale effect would be helpful.

I am casting around in an effort to discover the proper head for this important job and will submit suggestions to you when I feel the possibilities have been canvassed. I would appreciate your specific views on the skeleton organization in order that we may give you additional help in the personnel problem.¹²

The planning group working under Colonel Ames and General Cabell quickly came up with a proposed arrangement of functions, and on 12 May General Spaatz signed another letter to General Arnold, enclosing this time a proposed organizational chart. The real purpose of this letter, however, was once again to seek a final answer regarding cooperation with the British. Noting that there

seemed to be growing pressure for a combined U.S.-British survey, Spaatz urged resistance to such pressures "whether brought to bear over here, or in Washington through the Combined Chiefs of Staff, or otherwise." He offered two specific reasons for his stand on this issue:

(1) Any other arrangement would defeat our main purpose of getting at the plain facts through a committee headed by an impartial civilian chairman free from influence of official opinion on either side of the Atlantic.

(2) Soviet consent will be necessary to investigate German targets and records in the Soviet Zone of Occupation. Any prior arrangements for combined U.S.-British investigation would be inconsistent with policy indicated in cable of 5 May 1944 from Joint Chiefs of Staff to General Eisenhower . . . that in post-hostilities matters we should scrupulously avoid giving Soviets any impression of combined . . . planning excluding the Soviets.¹³

Whether or not such reasons reflected his innermost feelings on this matter, there could be little argument raised in Washington against the position taken by General Spaatz. He was, after all, the senior responsible officer in the field. He had himself recommended that the results of the campaign he was directing be investigated by an impartial committee headed by a civilian. His cooperation and support would be vital to the success of any such committee. He had, in short, taken an unusually liberal view of the whole question of an investigation. Now he raised one singular and firmly stated objection, backing it up with arguments of weight. It could hardly be expected in such circumstances that General Arnold would countermand the position he had taken.

As it turned out, the question was not finally decided until quite late in the summer. In the interim a series of meetings took place, General Cabell representing the American side and Air Commodore Sidney O. Bufton the British. The basic British view of the question came out at one of these meetings when the British participants observed that a combined survey

could present the Combined Chiefs of Staff *agreed conclusions* over the whole field to be covered; it would continue the arrangements whereby the study of these problems is at present

being carried out by combined Anglo-American research teams [a reference to the U.S. personnel assigned to R. E. 8], and it would avoid the administrative complications and duplication of effort involved in the establishment of two independent Missions covering very similar fields. *It would also avoid the possibility of divergent conclusions.*¹⁴

Although impressed by what he considered sincerely held views that were intended by the British to be constructive, General Cabell parried such arguments by agreeing tentatively to cooperation and exchange of information on the level of data gathering, but insisting that the conclusions to be arrived at should be reached independently by each nation; the basic argument used was that the conclusions would probably be pretty much the same and would gain in credibility by having been independently reached.¹⁵

The points raised by each side, however, were perhaps more academic than real. In a note written a year later, Sir Charles Portal, Chief of the Air Staff (RAF), explained, perhaps unconsciously, a view widely shared by air officers of both countries. A combined survey having failed, and the British Bombing Survey Unit (the eventual British equivalent of USSBS) still an uncertainty, Sir Charles contemplated the unhappy prospect of the USSBS findings becoming the sole record for the future.

I should regard this as most unsatisfactory. American bombing methods have differed from our own. It is therefore only to be expected that the American report would concentrate upon those results for which the Americans have been mainly responsible and in which they would quite naturally be most interested. On the other hand, it would almost certainly ignore or obscure some of the results of Bomber Command's operations of which I consider it essential to ascertain the importance. Moreover, there would be a danger that a rather incomplete picture would be given to the world of results of an offensive in which a large proportion of British resources had been employed in this war.¹⁶

And finally, though not mentioned to the British but stressed time and again by Spaatz and others writing back to Washington, there was the American feeling that a combined survey would involve unconscionable delay.¹⁷ In the American jargon the fear was that the British would "commit the thing to death," and hence that the findings of the survey would not be available in time to be

applied against Japan. In the end American stalling tactics finally convinced the British to drop the matter, and except for British help in training some of the USSBS field teams and some exchanges of data, there was no formal agreement between the USSBS and the BBSU either in matters to be investigated or in the findings reported.¹⁸

When General Spaatz's original letter of 5 April arrived in General Arnold's office in Washington, the commanding general had turned the matter over to General Kuter, AC/AS, Plans. Kuter began by returning the Major Colbert/General White proposal of 30 March, advising them simply that a similar proposal had been received from General Spaatz and that AC/AS, Plans—rather than AC/AS, Intelligence—was taking care of the matter. Kuter then canvassed the Air Staff for suggestions as to the person who ought to head such a survey,¹⁹ and prepared a memorandum to those agencies within the Air Staff that might be presumed to have an interest in the proposed survey.²⁰ From each addressee he solicited comments and suggestions regarding: "(a) the questions such a survey should answer, and (b) the organization to produce [the] answers required together with ideas as to quantity and type of key personnel."²¹ While awaiting the replies to his memorandum, General Kuter became worried about some ideas expressed by Major General Thomas T. Handy, Chief of the Operations Division, WDGS.

As Handy was his nominal superior in the plans business, reporting directly to General Marshall, Kuter had sounded him out before circulating his memorandum to the Air Staff. To Kuter's dismay, General Handy suggested not only that the survey should be combined (U.S.-British), but also that it should be a joint venture, one in which the Navy would participate. In a note to General Giles advising him of Handy's suggestions, Kuter put the AAF view of the matter in blunt terms.

The overall benefits to be derived from such a survey are multiple, but two are of primary importance; first, the knowledge gained would be of invaluable assistance in our aerial offensive against Japan and second, our entire future air policy might well be determined from the committee report.

Turning first to the question of cooperation with the British, Kuter observed that his second reason was sufficient unto itself to insist

that the committee be made up entirely of Americans. At the same time, and perhaps not consciously, he showed that the American planners had not yet gotten over their shock at Casablanca when they had found the British thoroughly prepared beforehand.²² He insisted that before *any* decision on cooperation was reached, "this mission should be fully planned and a skeleton organization established before approaching the British...since they undoubtedly have already given considerable thought to this subject." On the question of naval participation Kuter minced no words in expressing what may fairly be taken as having been the feeling of most AAF officers:

The joint interest with the Navy is not so apparent except so far as results of the survey are concerned. The Navy has not participated in the Combined Bomber Offensive and is not believed to have sufficient background in the ETO employment of air power to be of great assistance in the conduct of such a study. Their participation in the higher levels of such a committee might well be diplomatic on the part of the Army Air Forces but quite possibly might impair the paramount interests of the AAF. It might likewise serve to afford the Navy another rung in their ladder reaching toward the domination of American Air Power.²³

This view of the Navy's ambitions, however exaggerated, serves to point up the increasing tensions between the services, each of which by 1944 was hard at work laying plans for its postwar survival.²⁴ As it turned out, the Navy was to participate only in a liaison capacity when the USSBS went into Europe.

General Kuter did nothing further until the replies had come in to his round-robin memo of 28 April. By that time he had accumulated on his desk the follow-up letters from Spaatz of 20 April and 12 May and General Anderson's letter of 15 May worrying about British pressure for a combined Survey. After adding to this pile the twelve separate answers to his memo to the Air Staff and the responses to his earlier request for suggestions regarding a civilian chairman, it must have seemed to him that he had on his hands a major undertaking. After further discussions with General Arnold, the latter decided he should not proceed further before receiving the blessings of his colleagues on the JCS. On 25 May a cable was despatched to General Spaatz advising him of this decision,²⁵ and on 5 June General Arnold sent out a letter in reply to Spaatz's letter

of 12 May.

Arnold "heartily" agreed that "we should resist a combined U.S.-British investigation and report," and gave it as his belief that the British could be convinced that cooperation should be limited to the data-gathering phase of the venture. To keep Spaatz up to date on thinking at AAF Headquarters, he attached to his letter the suggestions received from the various staff agencies. On the matter of a civilian chairman he suggested that either Dr. James B. Conant or Justice Owen Josephus Roberts "seem worthy of consideration."²⁶

Two days prior to the despatch of his letter, another letter from Arnold to Spaatz had been mailed out. Apparently representing the last-ditch effort of AC/AS, Intelligence, to monitor the proposed Survey, it also mentioned by name some potential nominees for the position of chairman. More importantly, it suggested a philosophy of approach that had a considerable influence on planning over the next several months.

In any presentation of the project, we feel that you should stress the time factor and operational requirements of the war against Japan, leaving the question of important future Air Force doctrine in the background. In this way the survey is presented as an urgent operational requirement and avoids lengthy debate along abstract lines. . . . We should get in quickly and then promptly leave the field to whatever organization has been established . . . to cover the larger field of research.²⁷

Although representing good staff technique for selling the idea of the survey, the implied limitations as to both time and scope were to confuse matters when Mr. D'Olier and his associates arrived in London five months later.

On the historic 6th of June, when the JCS gathered to receive reports of the landings on the Normandy beachheads, General Arnold passed around the table a short memorandum addressed to Admiral Leahy, General Marshall, and Admiral King:

1. I propose to initiate as soon as practicable a critical survey of the results of the Combined Bomber Offensive in Germany and the occupied countries.

2. The benefits to be derived . . . are obvious. Of immediate value would be the lessons which we might employ in the

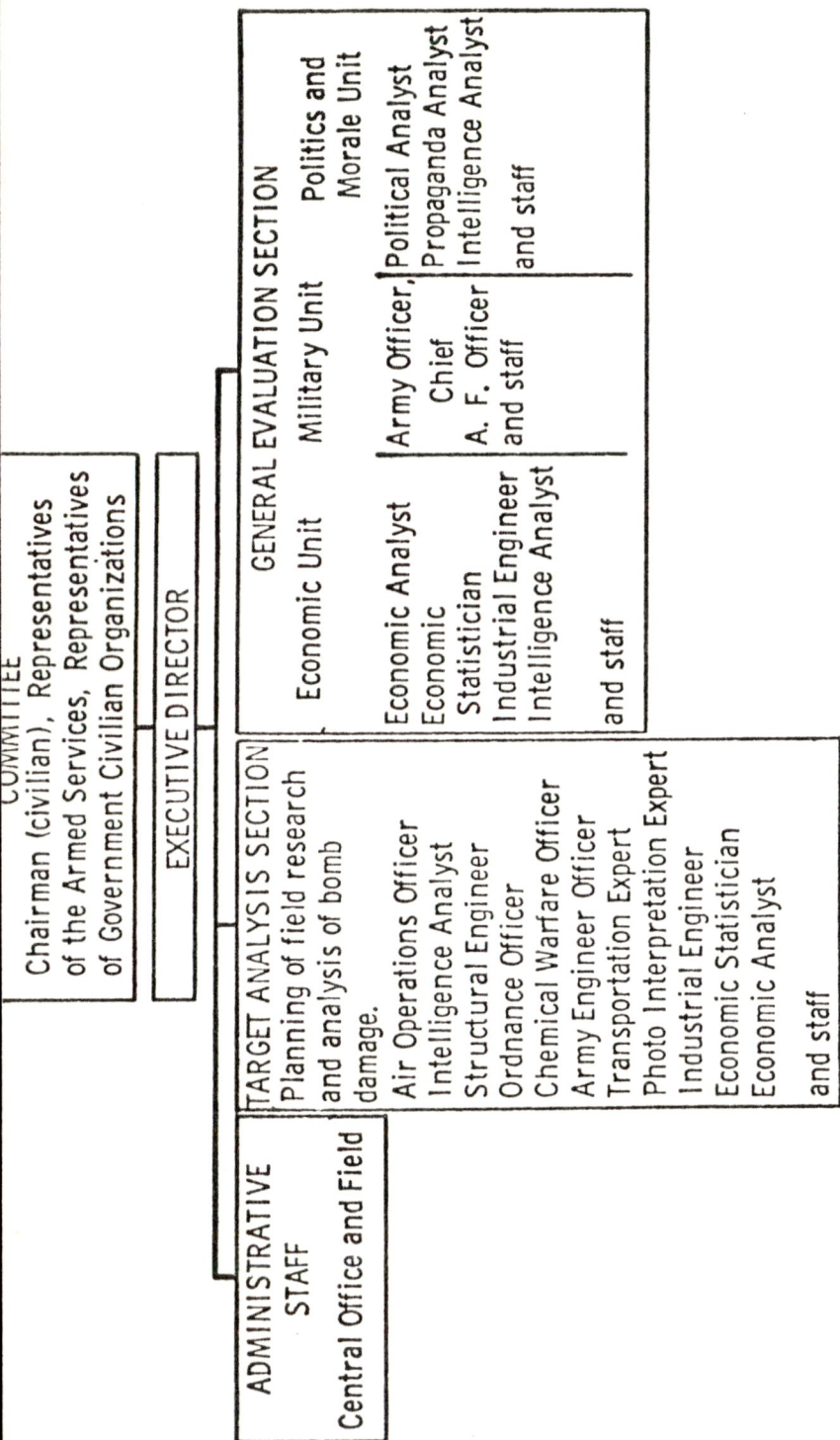
furtherance of our aerial warfare against Japan. Of the greatest importance is the possible determination of our whole future air policy.

3. The interest . . . of all our governmental agencies in a complete study of this nature is appreciated. I feel, however, that due to the urgency of mounting an aerial offensive against Japan, immediate survey should be undertaken. . . . I further believe that the Army Air Forces, having the paramount interest, should be charged with this initial survey with the Army ground and service forces and the Navy represented in such proportion as deemed advisable for their immediate needs and in order that impartiality may be assured. Your concurrence is requested.²⁸

The verbal approval of General Marshall and Admiral King was obtained,²⁹ and a major potential hurdle overcome. For several months thereafter, his attention taken up by other matters, General Arnold assumed that all was going well. Yet it is to London rather than to AAF Headquarters that one must look to find the initiatives that finally got the project off the ground.

Activities in London during June have already been alluded to. Essentially they consisted of General Cabell's continued sparring with the RAF on the question of cooperation and Colonel Ames's initial attempts to devise a "skeleton" organization for the survey. Attached to one of General Spaatz's early letters to General Arnold had been two charts, one suggesting precise manning requirements for the immediate planning stages,³⁰ the other showing the tentative arrangement of the fully organized survey. These charts were similar in structure; the latter, called "Chart A," is reproduced in Figure 1 on the following page. Two things in particular should be noticed: (1) the eventual size of the organization was still expected to be small, as few as twenty, as many as perhaps one hundred people; and (2) except for the chairman and a few technical specialists, the essentially military nature of the undertaking was evident. This latter point was made clear in designating the functions of the executive director, a position to be held by a senior military officer. He was to be responsible for "specific direction of the research" and "coordination of the analysis."

From an original idea of a committee of perhaps twenty or twenty-five people, the proposed size of the survey staff had increased by May to a number between seventy and one hundred. Throughout the summer this trend towards expansion continued.



"Chart A, Eventual Organization of the Survey to be made in Germany and German Occupied Europe of the Results of the Bomber Offensive (Tentative)," attached to Ltr, Spaatz to Arnold, 12 May 1944. Copy of chart in Beveridge, Vol. 11, frame 842.

Figure 1

This tendency was assured by the wide-ranging and occasionally volatile nature of some of the topics that were proposed. Among these were: (1) that the survey should "ascertain whether the U.S. air forces attacking Axis Europe accomplished what the Combined Chiefs of Staff intended they should do, or their mission as they themselves conceived it;" (2) that a "check should be made on the validity of a wide variety of the preconceptions on which air force strategy and tactics are based;" and (3) that enormous difficulties would be encountered in choosing a "yardstick" against which to measure the accomplishments of the air forces, there being such widely differing views on the purposes of air warfare.³¹ Almost a year later one of the survey members who had been around from the beginning summed up the continuing trend towards expansion: "We started out three men on a raft and ended up with the Queen Mary!"³²

In order to get things moving in some formally structured manner, AAF Headquarters tentatively approved the initial manning of the skeleton organization proposed by USSTAF³³ and selected a senior officer to take over further planning as executive director. Colonel Theodore J. Koenig, who reported for duty in London on 7 July 1944, was not only experienced in bombardment aviation but had also served before the war as assistant military attaché in Berlin.³⁴ Reporting to USSTAF on the same orders with Koenig was Major Ralph A. Colbert from AC/AS, Intelligence, author of the Washington proposal of 27 March. These two, working with the half dozen officers who had been assisting Colonel Ames, set themselves to the task of making the survey idea a reality.

Prior to the arrival of Koenig and Colbert, the pre-survey research task had been identified and planned but only fitfully begun. This work now began in earnest.³⁵ Yet no sooner did Koenig begin to get established than another jurisdictional problem loomed on the horizon. Not finally resolved until November, the new conflict arose with the creation in Washington of the Army Air Force Evaluation Boards.

Established for each major Theater of Operations by a War Department directive of 29 June 1944, the AAF Evaluation Boards were an outgrowth of the need of the Operations and Training Staffs in Washington for first-hand data on the adequacy of tactical air training in the AAF. Essentially, their aim was to determine whether pilots, bombardiers, gunners, armorers, etc., had received the right

kind of training. Additionally, the boards were to report on the combat effectiveness of aircraft and weapons in general, not to exclude tactical techniques recommended in the training programs and tactical effects of various weapons. Yet owing to a breakdown in the coordinating process at AAF Headquarters, the directive to the AAF Evaluation Boards was so all-inclusive as to contain, for example, instructions to report on "the psychological effect of air bombardment on the enemy nation." An obvious jurisdictional conflict presented itself, and much time and paper were lost in its resolution.³⁶

Another difficulty became apparent to Colonel Koenig when he received the report of an experimental field team that had been despatched to the Normandy beaches early in July to evaluate the effects of the pre-landing aerial bombardments. The report, while interesting, was found to contain little of scientific value. From this trip, and from others conducted soon thereafter, it became painfully apparent that the survey's investigators would have to be experts in their particular assignments and would have to develop standard techniques and criteria for data collection. As a step in this direction Koenig saw to it that potential survey members were sent to visit the experts at R. E. 8, EOU/EWD, and OSRD. Most of July and August were taken up with these problems.

While Colonel Koenig was doing his best to recruit survey members in London, the matter of finding a civilian chairman was not going well in Washington. The Air Staff's first choice had been Dr. Conant³⁷ of Harvard University and the NDRC, but Vannevar Bush, OSRD director, had refused to consider letting Conant go. In Conant's place he recommended Dr. John E. Burchard, an architectural engineer from the faculty of MIT, then serving as chief of NDRC's Division 2 (Structural Defense and Offense).³⁸ When this name was proposed to London, USSTAF replied that Burchard seemed the ideal man to head up the survey's physical damage studies but hardly seemed to have the prestige and national reputation desired for the chairmanship of the entire survey.³⁹ AAF Headquarters agreed and informed USSTAF that while continuing to seek Burchard to head up physical damage studies, they would now try to interest in the chairmanship either Dr. Robert G. Sproul, president of the University of California, or Mr. Edgar M. Queeny, president since 1928 of the Monsanto Chemical Company.⁴⁰ As this time-consuming process continued through July and August,

Colonel Koenig's patience began to wear a little thin. It was his view that unless the basic matters of appointing a chairman and issuing a formal directive were completed forthwith, the time was fast approaching when it would be too late to take the best advantage of the targets already being captured by ground forces.⁴¹ Unknown to Koenig, his concern was duplicated in Washington in the person of Mr. Robert A. Lovett, the Assistant Secretary of War for Air.

The matter of a bombing survey first came to the attention of Mr. Lovett in August when Vannevar Bush, having recommended John Burchard, advised General Arnold that he would have to withdraw the nomination. Arnold then called on Lovett, explained the background of the survey idea, and asked if the assistant secretary, a skilled negotiator well-connected in the banking and business worlds, would undertake the business of finding a chairman and obtaining Presidential approval for the project.

Lovett, formerly a partner of Brown Brothers, Harriman and Company of New York, had been recruited by Secretary of War Stimson in December of 1940, first as a special assistant and after April 1941 as Assistant Secretary of War for Air. A Navy combat pilot in World War I, Lovett had organized the first U.S. naval bombardment squadron and had participated with the Royal Navy in bombing raids on German submarine pens and railroad marshalling yards in occupied France and Belgium. Though returning to civilian life after the war, he had remained actively interested in aviation activities while pursuing his business career in New York.

Starting out, Lovett noticed that while the Plans Division was anxious to move ahead with the survey, there seemed to be "a certain coolness and lack of interest elsewhere" on the Air Staff, the project as a whole appearing "to be thoroughly bogged down." In his efforts to get things going again, Lovett struck on the idea of soliciting institutional sponsorship of the survey.

The most desirable project from many points of view, including the likelihood of getting Presidential sponsorship, seems to be to select some outstanding impartial institution such as Harvard, M.I.T., University of California, etc. The plan would be to have such a group—officially if possible, if not, as individuals—accept the responsibility for monitoring the enterprise, draw on their specialized schools as well as industry for personnel. I put the matter up to the White House and got a partial clearance from Hopkins. . . . The day before yesterday we talked to

President Conant who . . . said that the Harvard Corporation would have to pass on the matter . . . and expressed his doubts as to their approval.⁴²

On the same day that Lovett in Washington dictated this letter to General Spaatz, Colonel Koenig in London resolved to return to Washington to impress upon the Air Staff the importance of getting underway at once. The ground armies were by this time advancing rapidly across France, many targets on the preliminary lists for inspection by survey teams were becoming available, and it was beginning to appear that the war might end with the survey still in the planning stages. Several experimental field teams had already been despatched into France and among their unanimous findings was that targets had to be visited immediately they became available. Otherwise, rebuilding efforts or the depredations of advancing troops had the effect of destroying, as it were, the evidence.

After telling General Spaatz of his plans, Koenig departed London on 6 September for Washington, carrying with him an elaborate Progress Report covering the period 5 July through 1 September 1944. This sixty-four-page document contained a complete history of the survey concept since its inception in March, specific proposals governing the necessary allotment of men and materials, and detailed lists of targets to be visited.⁴³ After outlining the way in which the survey had by now been tentatively organized into five divisions (Physical Damage, Strategic Operations, Political and Morale, Economic, and Military Effects)⁴⁴ supported by an Administrative and Services section, Koenig's report described the functions each would perform. He proposed that these divisions should operate from several sites: (1) a Research Headquarters in London to which findings would flow from four regional Headquarters on the Continent (one in France and one each in the U.S., British, and French occupation zones in Germany); (2) a Field Team Headquarters outside London where the investigating teams would be billeted and from which they could be flown directly to their objectives; and (3) an office in Washington where the final reports would be written.

The main thrust of the survey's effort, as Koenig envisaged it, should be to concentrate on the physical damage effects and the immediate economic effects of bombing, since these seemed to be

the two aspects of most potential use in the war against Japan. Accordingly, basing his requirements on a list of eighty-three plants, four "city areas," and thirteen government ministries and military headquarters to be inspected, his report asked for sixty-three Economic Field Teams and twenty-five Physical Damage Teams. After adding spaces to cover administrative support, his proposed manning table added up to 1,579 spaces: 568 officers, 129 civilian specialists, and 882 enlisted men.

Knowing full well that these manpower requirements would be seriously questioned in Washington, Koenig was careful to explain the rationale behind the figures:

Throughout the whole planning for the Survey, emphasis has been laid on a three months post-hostilities period for the collection of data. . . . This emphasis has been [based on] the necessity of obtaining and analyzing material for the Japanese conflict . . . and on some field experience [showing] that it is far better to concentrate a large number of teams and collect the data while the damage factors are still unreconstructed, rather than use a smaller number of teams over a longer period of time. . . . This time factor has been decisive in determining the number of teams necessary.

He then went on to add another assumption, one not entirely borne out in the event, but one whose implications were a constant source of worry to the fully-developed survey.

It may be argued that a three month field period is insufficient to gather basic data on fundamental social and political questions, insofar as they are influenced by bombing. In this connection, it is felt that it is the function of the survey to draw what conclusions are possible on the basis of the "sampling" made, and not its function to get into a lengthy historical study of the war, and the part of the AAF in it. These studies will be made, and doubtless the AAF will have an interest in them. The conception of the present project, however, according to the interpretation of the planning group, is limited to an intensive survey of bombing effects, with the objects of drawing conclusions while the iron is still hot, and leaving to others the long term sifting out of factors of attrition, economic warfare, manpower shortage, etc. in respect to bombing, in bringing about Germany's downfall.⁴⁵

In a covering letter attached to the report and addressed to General Arnold, Koenig wasted no words in defining the major

difficulties of the moment:

... certain fundamental problems basic to the Survey have not been settled. Thus, to date (i) no head of the Survey has been designated; (ii) no directive defining the objectives of the Survey has been issued; and (iii) the necessary personnel with proper qualifications have not been made available largely because no authorization for such personnel has been given.⁴⁶

Coinciding as it did with the active involvement of Assistant Secretary Lovett, Koenig's energetic report was well received in Washington, and major decisions were taken within days of his arrival at the Pentagon. President Roosevelt's letter to Secretary Stimson, drafted by Lovett and dated 9 September, was received in the War Department on 16 September; the search for a chairman was accelerated; and the Personnel Department approved a tentative manning table of sixty officers and sixty enlisted men which, while well below the level requested, at least represented progress of a sort. Three informal letters from this period vividly portray the turbulent state of affairs both in Washington and in London.⁴⁷

On 16 September Major Thomas G. Upton, who had accompanied Colonel Koenig to Washington, wrote to Major Colbert, temporarily in charge of the London office, advising that the letter

is on the President's desk, and it is understood it will be signed. But nobody is there to sign it at the moment. . . . Harvard was asked to take the job, but refused as they said they were not in a position, as a matter of policy, to do this sort of thing. Then Dean David of the Harvard Business School was requested to take the Chairmanship—he has done several excellent jobs for the War Department—but he declined due to reconversion needs of the Business School. At the moment Compton of Tech is being approached. If he declines, the next to be approached will be Walter Gifford of A.T.&T., Dykstra of Wisconsin, and Sproul of Cal. . . . The order is subject to change. . . . The matter is being pushed actively by Sec'y Lovett. The Colonel dined with him and General Anderson, and David of the Business School the other night, and it was discussed at length. There is no doubt that as soon as it does break, it will do so in a big way. . . . We have had a lot of talk on the P. D. side, and hope to see Burchard on Monday. That picture was confused due to misunderstanding. . . .⁴⁸

Colbert's reply of 21 September described continuing experiments on the Continent,⁴⁹ listed the names of some new "recruits," and bewailed the fact that "the German-speaking group—'Lost Battalion'—was snatched away by the Ground Forces and shipped to the far shore." Finally, Upton reported to Colbert on 22 September that the President's letter had been received and that

we are pushing the recruiting here of research men, interrogators . . . and industrial advisors. . . . My chief worry now is that we will get our authorization . . . and our strong directive but will not be organized to cope with the number of men or the actual physical problem of recruiting, looking after and briefing them.

Encouraged by the interest being shown in Washington, Koenig left on 24 September to return to London. All his problems, however, had not been solved. Knowing that an interval of at least several weeks would elapse before a chairman could be appointed *and* arrive in London, Koenig had to make a decision. Should planning and recruiting be brought to a halt pending the appointment of a chairman who might turn out to have some very specific ideas on how to proceed and with whom? Or should Colonel Koenig, with the President's letter as his authority, continue building up the survey in the hope that the eventual chairman would not find too much with which to disagree? Koenig chose the latter course, primarily on the basis of the then widespread assumption that the war in Europe might be over within a few months. Two restrictions only were applied to this decision: (1) the relationship of the survey to various outside groups was to remain an open question until decided by the chairman; and (2) the recruitment of "key top personnel" would be kept "to an absolute minimum."⁵⁰

Back in London, Colonel Koenig continued to preside over the build-up of the survey. In the period between his return and the arrival of the chairman on 6 November, the only major developments were the further expansion of the Physical Damage and Economic Divisions. Each of these sent several Field Teams to Belgium and Paris to conduct experimental assessments of the bombing missions that had been directed against railroad marshalling yards and automotive plants. Accompanying these teams were a few British bomb damage analysts and some members of the AAF Evaluation Board. The planning stage was rapidly

advancing into the learning stage, and by 31 October the total strength of the survey was:

Officers: 43 (plus 18 on temporary duty and 2 in Washington)
 Civilian Technical Experts (full time): 3
 Civilian Administrative Help: 8
 Enlisted men: 73 (plus 35 on temporary duty)⁵¹

Prior to Koenig's departure from Washington an office was established there, ostensibly for the future use of the chairman, but manned for the moment by Lieutenant Colonel J. P. Donahoe. In a series of letters⁵² to Colonel Koenig, Donahoe tried to keep him advised of developments in Washington. The main problem, of course, was that of the chairmanship. Assistant Secretary Lovett and General Arnold finally decided on President Sproul of the University of California, carrying their efforts to the point of flying out to California early in October to convince both Sproul, who seemed willing, and the California Board of Regents, who did not, that Sproul's services were required.⁵³ Finally, Donahoe wrote Koenig on 17 October that

Dr. Sproul yesterday afternoon told Colonel Gaylord, who had called him, that he had written General Arnold a couple of days ago saying that due to the delay which will have to ensue before the California Board of Regents can formally approve his release (at a meeting of 27 October), it might be better for General Arnold to invite someone else to act as chairman of the mission.

The following day, Donahoe wrote again.

Candidates considered for chairman at meetings held yesterday and this morning . . . were: (a) Mr. Franklin D'Olier, President, Prudential Life Insurance Company; (b) Dr. Isiah Bowman, President, Johns Hopkins University; (c) Mr. Arthur H. Bunker, Executive Vice President, War Production Board. General Arnold called Mr. D'Olier today and Colonel Gaylord is going up to New York to talk to him tomorrow.⁵⁴

CHAPTER FOUR

THE SURVEY IS ORGANIZED

The Survey should consider not only the development of the CBO Plan and the effect of attacks upon selected target systems, but also the effect of attacks upon secondary and other target systems. It should answer the question whether any target systems that were not attacked should have been attacked. One of the fundamental purposes of the Survey is to determine whether the results obtained were commensurate with the expenditure of men and material.

General Fairchild to Mr. D'Olier
 28 October 1944

When Colonel Gaylord brought Mr. D'Olier to General Arnold's office in the Pentagon on the morning of Saturday, 21 October, the two of them were met by both the commanding general and Assistant Secretary Robert A. Lovett. Sensing at once that Mr. D'Olier seemed pleased at being called in to such high councils, General Arnold—as always—assumed the initiative.

"Colonel D'Olier, I have a job for you, a tough one, as tough as any I've ever pinned on anybody. Bob and I have talked it over and we agree that you are the man for that job. Put simply, what we want is for you and a group of your own choosing to go over to Europe and conduct a full-scale evaluation of the effects of our strategic bombing against Germany."¹

When Mr. D'Olier suggested that his background hardly seemed to fit him for the proposed task, Arnold assured him that that was

just the point—that what they wanted was a nationally prominent man of affairs with no axes to grind, pro or con.

"Well, I'd surely need a lot of help," D'Olier interjected. "Who would be my associates in such an undertaking?"

"We'll get you anyone you want," Arnold replied.

His interest piqued, D'Olier asked for more details on the background of the project. In the ensuing discussion Arnold and Lovett explained that their long-range goal was to obtain an impartial report, untainted by preconception or bias, that could be used as a basis for planning the postwar composition and strategic principles of the Army Air Forces. Such a report, they pointed out, should not only be written so that it would be meaningful to the man in the street, but should also be of such calibre as to withstand the scrutiny of Congress and other interested parties. At shorter range, Arnold explained, it would be helpful to have such a report at hand to guide those planning the air campaign against Japan. For this latter reason, the activities of the Survey group would have to remain "Top Secret" until final victory was assured.

The combination of Lovett's calm, dignified assurance and Arnold's "dynamic, explosive, contagious, enthusiastic prompting"² proved enough to overcome any initial doubts D'Olier may have had. Agreeing to take on the task, he asked for suggestions as to where to start. General Arnold suggested that he should first of all select some of his key associates and then fly over to Europe to get a first-hand glimpse of the situation there. "But these are only suggestions," Arnold concluded. "This is your job, and when you've finished your report not to me, but directly to Secretary Stimson and the President."

Leaving General Arnold's office, Colonel Gaylord took Mr. D'Olier directly to the office of Colonel Guido Perera, who had only a few days before finished up his work with the Committee of Operations Analysts.³ Impressed both by his qualifications and personality, Mr. D'Olier asked Perera if he'd like to work with him on his new job. Perera said he would, but that the decision would rest with his boss, General Kuter, AC/AS, Plans. D'Olier then went to Kuter's office and upon receiving assurances of all possible assistance immediately asked for the assignment to him of Perera as "assistant to the chairman." This having been granted, D'Olier, Perera, and Gaylord retreated to Perera's office to discuss the next step.

When D'Olier mentioned that he'd like to have a vice-chairman of

really exceptional executive ability, Perera suggested the name of Henry C. Alexander, a lawyer and banker who was director and vice-president of J.P. Morgan and Company.⁴ Perera added that Alexander was a personal friend of Bob Lovett's and had earlier offered his services in any capacity that Lovett thought serious enough to warrant his acceptance. A check with Lovett elicited the assistant secretary's enthusiastic approval and agreement to call Alexander in New York. D'Olier then concluded his morning at the Pentagon with a visit to Colonel Koenig's Pentagon liaison office where he met Lieutenant Colonel J. P. Donahoe, who described the efforts already afoot to obtain both officers and enlisted men with special qualifications in industry and European languages. Before breaking up, the group agreed to reconvene the following Wednesday.

Mr. D'Olier returned to Newark where on Monday he received a telephone call from Henry Alexander in New York. Alexander told him that at Lovett's urging he had agreed to join the enterprise as vice-chairman for a period of sixty days, long enough to get the Survey through its organizational phase. At the same time he agreed to come down to Washington for the Wednesday meeting in room 3D1000 at the Pentagon. At that meeting Mr. D'Olier outlined his views on what should be the basic organizational framework of the Survey.

Taking his lead from some suggestions of Colonel Perera, D'Olier proposed that the highest level of the Survey should be an executive committee on policy, made up of from eight to ten top experts in the various subjects the Survey would investigate. In addition to serving on this committee, each of its members would be responsible also for the actual conduct of the investigation into matters within his area of specialization. While the precise number of experts and the precise fields each would look into were left up in the air for the moment, it was generally agreed that for a start there would have to be specialists in each of the following industries and specialties: transportation (rail and water), oil, steel, munitions, ball bearings, machine tools, aircraft (design and manufacture), civilian defense, civil and structural engineering (for assessing physical damage), and "morale." The basis for so segregating the analysis lay in a combination of the target systems in Germany that had been attacked (oil, aircraft, ball bearings, etc.) and the instructions contained in the President's letter to Secretary Stimson (morale, civil defense, etc.). In practical terms capable of being transferred to an organizational chart, the

arrangement would be into several "Divisions," each headed by a civilian "director" whose authority, paralleling that given to D'Olier, would be complete within his area of specialization.

D'Olier's management approach paralleled that familiar to the business rather than the military world. What he seemed to envisage was a broad holding company of which he was chairman of the board, advised by a board of directors each of whom was the director (president) of an operating company of an autonomous nature. The role of the vice-chairman, Mr. Alexander, was to be that of chief executive officer. From the beginning D'Olier established his own role to be that of referee rather than manager; he would take the responsibility, make the important high level contacts, bear the brunt of criticism. But day-to-day operations were to be under the control of the various directors meeting together frequently under the operational leadership of Mr. Alexander.

Management philosophy thus roughly outlined, the meeting addressed itself to personalities. Working from some tentative suggestions drawn up by Colonels Perera and Donahoe, D'Olier and Alexander considered a list of some thirty individuals, five of whom eventually became directors of the Survey. These were: (1) Mr. George W. Ball, then a member of General Fickel's AAF Evaluation Board for the ETO, at this time back in Washington on a mission for General Fickel. A Chicago lawyer, Ball had been an associate general counsel for the Foreign Economic Administration and while working with the Air Staff on some of General Fickel's problems had made an exceptionally favorable impression;⁵ (2) Mr. Paul H. Nitze, an investment banker from the New York firm of Dillon, Read and Company, who had been in government work since 1941, most recently as director of the Foreign Procurement and Development Branch of the FEA. Like Ball, Nitze had a well-earned reputation for keen analytical abilities, but unlike Ball—a quiet, thoughtful man—he was also known to be an aggressive, energetic executive with a knack for "getting things done in a hurry;"⁶ (3) Mr. J. Fred Searls, Jr., vice-president of the Newmont Mining Company, then working closely with James F. Byrnes as a special assistant in the Office of War Mobilization;⁷ (4) Professor Harry L. Bowman, chairman of the Department of Civil Engineering at Drexel Institute of Technology in Philadelphia. Bowman, selected to head up the physical damage study, had worked on several projects for OSRD including in the summer of 1942 an intensive study of bomb damage to industrial

centers in England;⁸ and (5) Dr. Rensis Likert, a specialist in public opinion sampling, then in charge of the Division of Program Surveys of the Bureau of Agricultural Economics, Department of Agriculture.⁹

Tentative assignments were made as follows: Ball, Transportation Division; Nitze, Ball-bearing and Machine Tool Division (later expanded and renamed Equipment Division); Searls, Munitions Division; Bowman, Physical Damage Division; and Likert, Morale Division. Between the meeting on 25 October and the departure of D'Olier and his chief lieutenants for London on 4 November, each of these people was approached by either D'Olier, Alexander, Gaylord, Perera, or Lovett, and each agreed, at least tentatively, to serve. Additionally, the participants at the first meeting began sounding out other possibilities, especially in the fields of aircraft production, economics, and petroleum production.

For director of the proposed Aircraft Division they considered the chief executive officers of virtually every major aircraft company, but from the beginning held out the hope that they could get the then Administrator of Civil Aeronautics, Mr. Theodore P. Wright, a former vice-president of the Curtiss-Wright Corporation and since 1940 holder of a series of important government posts in the aircraft production field.¹⁰ Wright tentatively agreed, provided he would be allowed to select his own deputy to do the majority of the field work. For the Oil Division the first choice was Mr. Robert P. Russell, executive vice-president and general manager of the Standard Oil Company, and a chemist who had worked with Division 11 (Chemical Engineering) of the NDRC.¹¹ Russell agreed to come down to Washington early in January to discuss the matter. For chief economist, a man who would head up an Overall Economic Effects Division that would attempt to pull together in one analysis the effects of bombing on the German war economy as a whole, the initial group began a long and frustrating search that was not successful until the end of March 1945.

The whole process of recruiting people for the Survey was remarkably similar to that which characterized recruiting for the Committee of Operations Analysts. A small group of well-connected executives, lawyers, and professors (some of them in uniform) got together, outlined the specific fields of interest to the group, and informally suggested the names of friends and former colleagues (or classmates) who might be able to help. Then came telephone calls and personal

visits to sound out the top choices, the aim being to obtain at least tentative agreement to serve. And then, finally, as first one and then another agreed to participate, the process would begin again as the new recruits offered further suggestions. All in all, the process was rather more "clubby" than most Americans might tend to presume. And the proof of this is the inordinate lengths gone to on occasion to cover the tracks of the recruiters and make it appear that the eventual appointments were based solely and exclusively on the fact that so-and-so was quite obviously *the* most logical choice for the job.¹² Whatever may be the virtues and vices of such a procedure in general terms, it must be agreed that for a task as difficult as that facing the Survey it was the only sensible way to approach the problem. This is especially true since D'Olier's mandate unequivocally gave him the right to choose his associates as he saw fit.

In the week following the meeting on 25 October, the majority of Mr. D'Olier's activities revolved around the recruiting problem. There were two other important matters of concern, however. The first was that of obtaining a specific directive of some sort that would spell out the authority and responsibility of the Survey, not only for its own members, but for the guidance as well of the numerous headquarters (SHAEF, USSTAF, MAAF, etc.) that would be affected. Colonel Gaylord took this matter in hand, completing the staff work by 27 October and with Mr. Lovett's intercession obtaining the necessary signatures from General Arnold, General Marshall, and Secretary of War Stimson. This series of implementing directives, all dated 3 November 1944, comprised the following: (1) D'Olier's formal letter of appointment from Secretary Stimson;¹³ (2) letters from General Marshall to the commanders of the European and Mediterranean Theaters of Operation advising them of the priority they were to attach to their support of the Survey;¹⁴ (3) a letter from General Marshall to Admiral Ernest J. King, Chief of Naval Operations, asking that the Navy make available an officer of flag rank to join other non-Air Force officers who would participate in a proposed board of military advisors to the Survey;¹⁵ and (4) letters from General Arnold to General Spaatz (formally advising him of the Survey's establishment and noting that Mr. D'Olier would be arriving in London in a few days)¹⁶ and to General Fickel (advising him of the Survey's priority over the AAF Evaluation Board).¹⁷ With this series of letters the Survey was officially set in motion and christened the United States Strategic Bombing Survey (USSBS), the last of several

designations more or less appropriate.¹⁸

The third matter—after recruiting and formal establishment—was that of making Mr. D'Olier familiar with the background of strategic bombing. Essentially this was the task of Colonel Perera, but on Saturday, 28 October, Perera took Mr. D'Olier to the office of General Fairchild to get the personal views of the man who originated the idea of the Survey. In a long meeting taking up most of the morning, General Fairchild provided Mr. D'Olier with a capsule history of the theory of strategic bombing. The concept of strategic bombardment, Fairchild told him, had been developed by Air Corps officers between the wars and was based on the premise that air power furnished an instrument with which it was for the first time possible to strike directly at the sustaining sources of enemy strength. The old technique of blockade offered similar possibilities, but blockade was not a selective instrument. Destruction of selected targets, Fairchild said, offered the chance of high success with relatively small forces compared to those necessary for either blockade or menace raids on large industrial centers. The major problem, however, was that no system had been devised before the war to select the most vulnerable and productive targets.

Fairchild then recounted the history of AWPD-1, AWPD-42, the COA, and the CBO Plan. Each of these, he said, was based on apparently reasonable assumptions allied to meagre intelligence data. D'Olier's task would be to determine not only how well the bombers had performed and to what effect, but also how well the planners had done their work. Complicating the whole task would be the purely operational factors affecting the bombing campaigns, many of them unforeseen by the planners. In this category Fairchild mentioned the numerous "diversions" from the basic plan, diversions brought on by the requirements to support the North African and Normandy invasions, to attack the launching sites of V-1 and V-2 weapons, and generally to support General Eisenhower's movements in the three months following the landings in France. But most difficult of all, Fairchild noted, had been the effects of bad weather either over the preferred targets or over the bases in England.

The development of navigational and radar aids had not reached the point where instrument attack against pinpoint objectives could be relied upon. The greater number of selected

targets were under cloud cover a major portion of the time. This resulted in part from the necessity of flying at high altitude in order to avoid anti-aircraft fire. . . . As a result it became necessary to operate against secondary, tertiary, and even lower priority targets rather than against prime objectives. In addition to the problem of weather, numerous feints had to be made in order to confuse the enemy as to target systems upon which we planned to concentrate.¹⁹

But having listed all the difficulties, all the trials and tribulations, Fairchild remained true to his initial purpose, concluding with the admonition that the Survey's task was not to find excuses but to judge results, not to paper over difficulties but to call the shots as it saw them, to let the chips fall where they may. Much impressed with General Fairchild's candor, Mr. D'Olier left his office feeling that General Arnold's characterization of his task as a "tough job" represented a formidable skill at understatement.

The following Friday, 4 November, Mr. D'Olier and ten others enplaned at Washington's National Airport for their first trip to London. Making the trip with D'Olier were Alexander, Ball, Nitze, Searls, Bowman, Likert, Perera, Donahoe, Captain Gaston Colblentz, Staff Sergeant L. J. Povse, and Adlai E. Stevenson (the latter recruited by Ball to take his place on the AAF Evaluation Board).²⁰ The flight over was uneventful, the party arriving in London on the morning of 6 November. Later in the day D'Olier, Alexander, and Perera called at 20 Grosvenor Square where Colonel Koenig had secured offices recently vacated by General Eisenhower's staff, lately moved to France.

Colonel Koenig, with the assistance of Major Colbert and Colonel John G. Zierdt,²¹ spent most of Monday and Tuesday outlining to Mr. D'Olier and the directors all that had taken place in London since July. Essentially, effort had thus far outweighed results, and while the organization numbered some 150 people only a hesitant beginning had been made. By far the best prepared portion was Colonel Zierdt's Physical Damage section. A carefully selected list of targets had been identified for investigation by Field Teams, the composition of the Field Teams had been thoroughly planned, and a few experimental investigations were underway on targets in France. But then this was to be expected, in a way, since the investigation of targets solely for the purpose of determining the extent and type of destruction by various weapons was hardly a new science; and Zierdt was an Ordnance officer who had available to him not only the Ord-

nance manuals governing such work but also the considerable expertise of the British personnel at R. E. 8.²²

The Economic Section, under Major Colbert, was in no sense as well prepared. In the first place, the investigation of the economic effects of bombing was a new science and, accordingly, there were far fewer people around who could claim any experience at the task. This difficulty had been met at first by attempting to get the Economic Warfare Division at the U.S. Embassy to take on the task of devising the approach to the economic investigation. While several tentative approaches had been tried, the results to date had been disappointing, owing in part to personality problems between Koenig and Colbert on the one hand and Mr. Irwin Nat Pincus of EWD on the other.²³ The root of these difficulties lay in the desire of Koenig's staff to recruit members of the EWD staff for permanent assignment to the Survey, whereas the position of Mr. Pincus was that EWD, as time permitted, would assist the Survey while maintaining unscathed its own institutional existence.

The biggest problem, however, was simply that there were no general grounds for agreement on how to weigh the effects of bombing on the German economy. Accordingly, most of the effort expended thus far had been in the direction of compiling Target Folders for a selected list of targets that it could be fairly certain would be investigated, e.g., the ball-bearing plants at Schweinfurt. These Target Folders, for use by the Field Teams, would contain every available scrap of information about the particular target: when attacked, by what organization, with how many aircraft, with what weight, type, and fuzings of bombs; to what apparent effect at the time (as judged by post-strike photography and other sources of intelligence); in what weather conditions, against what degree and type (aircraft, flak, smoke screens) of enemy opposition; and so forth. In addition, the folders would contain standardized questionnaires and checklists designed with the hope of assuring that Field Team members collected comparable data at all targets they visited.

On the larger question, that of measuring overall economic effects, a few hardy souls both in EWD and within the Survey had proposed theoretical models outlining a number of ways to approach the problem. Progress toward agreement was dreadfully slow, however, the efforts of the academicians being too theoretical for the tastes of the officers and those of the officers reflecting intuitive shortcuts anathema to the academicians. No matter which way one

turned there seemed no easy answer. If one devised a model of what German production would have been without bombing and then compared actual production with the total provided by the abstract model, how could one be *sure* that bombing alone caused the difference? If a particular plant had been suffering from a shortage of labor, power, and raw materials, and then came under a bombing attack, who could be certain which factor was responsible for an ensuing production loss? These and similar questions were to plague the Survey members throughout their investigation. For the moment, however, the directors remained optimistic.

As Mr. D'Olier's main concern on this trip was more getting to know the people involved than the technical problems of the task, he at once set about making arrangements for a series of meetings. On Wednesday, 8 November, he, Alexander, Perera, and Koenig attended a conference at WIDEWING (Hq, USSTAF, REAR) with General F. L. Anderson and his staff.²⁴ Two days later the same group plus Ball and Nitze met with Mr. Pincus at EWD.²⁵ Over the weekend, Mr. D'Olier met with Major General Jacob E. Fickel, president of the AAF Evaluation Board for the ETO, and the two worked up a joint memorandum spelling out the jurisdiction of each group. Agreeing that it was impractical to divide responsibility according to the nature of the target—that is, whether tactical or strategic, since the heavy bombers had flown both types of missions—D'Olier and Fickel made their essential division along geographical lines: (1) the Survey would operate alone in Germany proper; (2) in France and Belgium, such studies as the Evaluation Board had begun, regardless of their nature, they would finish, but there would be agreement before other studies were initiated; (3) all matters of flying tactics and techniques would be the business of the Evaluation Board exclusively. Or, as General Arnold had announced in a meeting on 14 October in Washington, "If Dr. Sproul is interested in tactics and technique, give him a copy of Jake's report."²⁶

The same group that had gone to WIDEWING attended a conference at PINETREE (Hq, Eighth Air Force) with General Doolittle and his Deputy for Operations, Major General Orvil A. Anderson, on Monday, 13 November.²⁷ At this meeting they were given a thorough briefing on the day-to-day operations of Eighth Air Force and its subordinate units. On 16 November, leaving Nitze in charge in London, D'Olier, Alexander, Perera, and Koenig set out to meet the top commanders on the continent.

The first stop was at General Spaatz's forward headquarters at St. Germain-en-laye near Paris. During a two-day stopover there, General Spaatz took D'Olier and Alexander to meet General Eisenhower at SHAEF Headquarters nearby. The group then flew to Naples where they met with Generals Eaker, Cabell, and Currie in the Royal Palace at Caserta.²⁸ Two days later they flew to Fifteenth Air Force Headquarters at Bari where they met Major General Nathan F. Twining and his staff. Returning to Naples, they next headed for Rome (taking time out for an aerial tour of devastated Monte Cassino) where they spent Thanksgiving Day, returning to Paris on the 24th and to London on the 25th.

In the absence of D'Olier and Alexander, Mr. Nitze struggled with the problems of the Economic Section, meeting again with Mr. Pincus on the 20th.²⁹ His most important meeting, however, was at Bury St. Edmunds on the 22nd with Colonel Frederick Castle, commander of the Fortieth Combat Wing. A top combat commander and veteran of Schweinfurt, Colonel Castle would be killed in action before the year was out. Among his last services, however, was presenting Mr. Nitze with a most complete and lucid commentary on the whole conduct of bombing operations since 1942. The resultant memorandum prepared by Nitze and the two papers provided Nitze by Colonel Castle had a profound effect on the civilian directors of the Survey. Going into precise detail where General Fairchild had been able to offer only generalities, Castle made it clear to the Survey members that their conclusions would have to take into account the consistently changing character of operations as they had been affected by weather problems, increased numbers of aircraft and crews, improving skills, and changing defensive tactics of the Germans. He stressed that the Survey should consider the effectiveness of air power not from the standpoint of techniques available at a given moment, but in the light of the *trend* of developments. At the same time he made a strong plea for the Survey to distinguish between what he called "Strategic Military Bombing" (in support of the Ground Forces) and "Strategic Economic Bombing."³⁰

The day after D'Olier's return from France, he gathered his advisors for a strategy session. Out of this meeting came a resolve to return at once to Washington to work on three major difficulties. The first of these, of course, was the need to obtain a much larger number of civilian technical and industrial experts. The second matter reflected the concern shown by the top commanders he had

talked with that the Survey should form a "Military Division," headed by a senior AAF officer with the assistance of officers from the other services, to advise the civilian members of the Survey on the sorts of things that Colonel Castle had described. Although they had not envisaged such a requirement at first, D'Olier and the others were now convinced that for their own good they would need such assistance. Driving airplanes, dropping bombs, and measuring the results, it had become clear, was not so simple a matter as might be guessed from reading headlines in *The New York Times*. Contributing to this decision was a vague feeling of uneasiness about some of the people they had met who were already working on evaluation problems without any real experience in operations. As Mr. Alexander put it with reference to EOU/EWD: "It consists of a bunch of young fellows out of OSS and FEA. They are bright, but I am not at all sure how much sense they have. I find them rather short on giving one a feeling of open-handedness in discussing matters."³¹

The third major difficulty requiring assistance in Washington related to attacks against oil refineries in Germany, the majority of which were in locations that would come under Soviet control when hostilities ceased. Tentative discussions of this matter with the Soviet members of the European Advisory Commission had led to fears that the Russians were very skeptical about what might be the "real" designs and purposes of the Survey and that they therefore might impose objections. It was decided that Mr. D'Olier should propose to Secretary of War Stimson that the President make a personal appeal to Marshal Stalin. Leaving Mr. Alexander in charge in London, D'Olier and Perera departed for Washington on 28 November, planning to return within two or three weeks. Also returning to Washington were Dr. Bowman, because of sickness in his family, and Mr. Searls, whose immediate presence in Washington had been demanded by Mr. Byrnes of the Office of War Mobilization.

Back in Washington, D'Olier found that the War Department had authorized the Survey a complement of 300 officers and 500 enlisted men. Still unresolved was the total number of civilian specialists that might be recruited, but the figure of 300 was suggested as a guide for planning.³² Authorized strength, however, was less a problem than actual strength, so most of D'Olier's and Perera's time was taken up with figuring out ways to identify and recruit civilians with extensive backgrounds in production management. In this respect the greatest problem centered around one

major unknown factor—when would targets in Germany become available for inspection? The sort of men they desired were for the most part still performing important duties on the home front; to withdraw them and then have them sit on their hands awaiting the end of the war in Europe was looked upon as inefficient at best and more than likely impossible at worst. For the moment, D'Olier decided to line up as many volunteers as he could with the understanding that they need not depart the U.S. until such time as their services could be put to urgent use. This whole problem of timing was exacerbated on 17 December when word reached Washington of von Runstedt's breakthrough in the Ardennes. The resulting "Battle of the Bulge" had the effect for the Survey of increasing the already turbulent character of the milieu in which its members were trying to organize themselves.³³

As a senior military advisor to the Survey, D'Olier tried to obtain the services of Major General Grandison Gardner, commander of the AAF Proving Ground at Eglin Field, Florida. (While in Italy D'Olier had tried to convince General Cabell to take this post, but acceded to Cabell's view that his personal involvement in drawing up the CBO Plan disqualified him as an evaluator.) When General Arnold pleaded that Gardner should not change jobs at least until victory in Europe, D'Olier accepted instead Brigadier General Edgar P. Sorenson, an AAF career officer formerly with the COA.³⁴ It was while discussing these matters with Generals Arnold and Kuter that Mr. D'Olier arranged for the reassignment to other duties of Colonel Koenig.

Prior to leaving London, D'Olier had decided that it would probably be in the best interests of all concerned that the newly appointed chairman and directors be from the start established as the single point of authority within the Survey and that the principal source of any prior loyalties be removed. While relationships between the civilian directors and the officers on Koenig's staff had been cordial on the surface, neither group as yet felt very comfortable in the unusual working arrangements that characterized the organization of the Survey. Accordingly, it was agreed that Koenig should stay on until the arrival of General Sorenson, while in the interim Koenig would be offered the opportunity to find a new position. A kind letter of thanks from Assistant Secretary Lovett to Colonel Koenig served to smooth over any open disappointment.³⁵

On the third major item of business, securing access to targets

likely to come under Soviet control, D'Olier was unsuccessful. His approach to Secretary Stimson, suggesting that the latter prepare a personal appeal from the President to Marshal Stalin, was turned down by the secretary, who considered such a move "premature."³⁶

While in Washington D'Olier also arranged for the temporary loan of Colonel Frank A. McNamee, Jr., to be in charge of the Survey's analysis of the German civilian defense program. An Albany attorney and much decorated veteran of World War I, McNamee had been recalled to active duty in 1942 and was serving as deputy director of the Office of Civilian Defense.³⁷ Eventually appointed director of the Survey's Civilian Defense Division, McNamee was one of only two uniformed officers to be designated a director. Also arranged at this time was the assignment to the Survey of Commander S. Paul Johnston, author, aeronautical engineer, and former editor of *Aviation*, then serving with the Navy at Pearl Harbor. Since it had become obvious that T. P. Wright, owing to his position as Administrator of Civil Aeronautics, could not devote full time to the Aircraft Division, Wright had recommended that Johnston take over the work of that Division in Europe. As happened in one or two other instances, General Arnold's promise to "get you anyone you want" was made good only after the commanding general's personal intervention.³⁸

D'Olier and Perera then departed Washington, arriving back in London a few days before Christmas. There they learned that the principal business conducted in their absence had been a series of meetings with representatives of the British Air Ministry, in particular those officers charged with setting up the British Bombing Survey Unit, still an uncertainty. As a result of these and other meetings, a number of decisions had been reached: (1) should the BBSU become a reality, the two groups would cooperate when possible in the collection of data at various target sites; (2) each group would reach its own findings independently of the other; (3) the concern of the British over the possible withdrawal of American personnel attached to R. E. 8 was quieted by the Survey's agreement to find other sources for its physical damage experts; (4) a final decision was reached not to "farm out" the Survey's economic analysis to EWD, but rather to conduct the entire task with men recruited in the U.S. by the Survey; and (5) arrangements had been completed for a series of "training and indoctrination" lectures to be attended by people assigned to the Survey, now beginning to increase rapidly in size.³⁹

Two days following their return to London, Mr. D'Olier and Colonel Perera addressed an assembly of the entire Survey. Perera led off with an hour's talk on the history of strategic bombing, concluding on the theme that the Survey's main task was to appraise results rather than to concentrate on criticism based on preconceptions, cliches, and other variously derived opinions. D'Olier then followed with a shorter talk on the background of the Survey. His conclusion, like Perera's, reflected his growing concern that the lower ranks of the Survey contained far too many self-appointed experts who had already arrived at, and were trying to promote, personal evaluations of the conduct of the air war.

Let me state definitely the objective of the Survey. Our objective is to evaluate the importance and potentialities of air power as an instrument of military strategy. . . . We shall proceed in an *open-minded* manner, without prejudice, without *any* pre-conceived theories, to gather the facts. We are simply to seek the truth. And when *all* the facts are gathered, then the *Directors* will draw up the report as impartially as it is humanly possible for us to do. We have no intention, nor should we at this stage, of commending or criticizing any individual, group, or organization in any way except as *final* facts and the real truth might so require.

Writing a few days later to Mr. Alexander, D'Olier explained his purpose: "We wanted to burn into everybody's soul that the Survey's responsibility . . . was to ascertain facts and to seek truth, eliminating completely any pre-conceived theories or dogmas."⁴⁰ Where previously there might have been doubts in some minds in London about who was in real control of the Survey's activities, after this meeting there were none; a minor point, perhaps, in retrospect, but absolutely crucial in the eyes of D'Olier and Alexander.

The following week, in part owing to the confusion and delay in London wrought by the unexpected setback in the Ardennes, D'Olier decided to reconvene the directors for the time being in Washington. Alexander and Nitze had departed London on 21 December; D'Olier and the remaining directors departed between then and the 30th, the majority managing to spend New Year's with their families.⁴¹

When the directors reconvened,⁴² they began by hearing a report from Alexander and Nitze about a visit with General Fairchild late in December. Once again the man most responsible for establishing

the Survey had spoken at great length to the effect that the Survey owed it to the nation to conduct as rigorous an evaluation as possible. "How good was the CBO Plan?" he demanded they find out. "Where was the plan at fault? Why was it faulty, and what should the plan have been? What do we need to know about the industrial structure of potential enemies? How detailed should this information be? How should it be obtained?" Though Mr. D'Olier had been doing his best to emphasize fact-finding before criticism, he found himself continually reminded by General Fairchild that a report lacking criticism would be of no value.⁴³

The main order of business facing the directors, however, concerned the slow progress being made in the recruitment of civilian technicians and production experts. After encouraging each director to do all he could within his own area of responsibility, D'Olier appointed Alexander and Nitze a committee of two to set up some formal method of recruitment to cover all fields. To help in this, Alexander managed to secure the able assistance of J. Harris Ward, a friend of his and Lovett's then serving as a captain (Ordnance) in the office of the secretary of war. Early in January, Ward—an experienced management trouble-shooter, both in and out of government⁴⁴—arranged a series of meetings with officials of the War Production Board. The Survey members gave the WPB officials a list of ten industries,⁴⁵ asking that WPB give them the names of ten men from each industry who could meet the following qualifications: speak German fluently; be American-born and not more than forty-eight years old; be production (rather than sales or financial) men; and be currently active in their specialty. It was agreed that submission of a name would not imply a willingness to serve; the Survey members themselves would undertake individual contact in each case. It was further agreed that immediate service would not be necessary. Rather, the Survey would identify and place in an on-call status those who agreed to help. None would be called until actually needed on the continent, and each man so agreeing could promise his employer that he would be gone for not more than sixty to ninety days. It was in this way that the Survey obtained a long list of names from which, eventually, it recruited most of its specialists. But the process was slow and agonizing, Captain Ward working at the problem full time from early January until late March. The main difficulty lay less with the men approached than with their employers, many of whom were understandably reluctant

to release their best men during a period of peak production. So difficult did the problem loom that by late January Alexander decided to ask for a decreased authorization of civilians—from 300 to 200—and a corresponding increase in his authorization for military officers.⁴⁶

If recruiting important civilians for duties below the level of director proved difficult, no less so were the problems associated with keeping them happy on the job. Many resented working for military officers who, for practical reasons, were usually in administrative charge of Field Team operations on the continent. And immediately below each director in the pecking order was a "chief" of each Division, in many cases—and again for practical reasons, especially the assignment of enlisted men—also a military officer. Questions of relative status and prestige, aggravated by misunderstandings about rates of pay for civilians, proved a constant source of frustration to Mr. Alexander. It is a tribute to his skill and patience, however, that most such difficulties were resolved quietly and with despatch, the details hidden from the sight of contemporaries.⁴⁷

While most of the directors remained in Washington, Paul Nitze and George Ball returned to London in mid-January. They were followed within a week by Alexander, Russell (Oil Division), Commander Johnston (Aircraft Division), and General Sorenson.⁴⁸ Convening a meeting in London on 15 January, Nitze described the recent activities of the directors in Washington. His main concern, however, was to get across the point that the organizational phase had now taken long enough, and it was time to get down to the business of actual operations and reporting. The Joint Target Group, he said, was anxious to receive any and all suggestions or tentative conclusions; General Currie's AAF Evaluation Board for the MTO had already begun to submit reports, and some teasing had gone on in Washington to the effect of wondering aloud when the Survey was going to produce something of value.⁴⁹

From January until the end of March, Mr. D'Olier remained in the United States. In London, effective control of the Survey's activities was in the hands of either Henry Alexander (24 January-9 March) or, in his absence, Paul Nitze. While considerations of space preclude an item-by-item account of the activities of these months, certain major decisions and events of long-range significance cannot be ignored. The remainder of this chapter will treat

People: Numbers, Space, Organization

At Bushy Park was established the Services Division under the command of General Sorenson. This Division, to which the majority of military personnel were assigned, was organized in four main branches⁵³ and became the work horse behind the scenes for the Survey's other Divisions. Whatever the problem, from airlift requirements to typewriter repair, some section or branch of the Services Division was responsible. No history of the Survey would be complete without acknowledgment of the yeoman service of its officers and NCOs.⁵⁴

The organizational structure of the Survey as a whole underwent continuous revision. The *basic* change from that envisaged by the early planners was the move away from a horizontal structure of three or four co-equal parts to a vertical structure of numerous Divisions, each operating independently under the general supervision of the executive committee of directors. This transition was administered by Alexander and Nitze during January and February. They began by breaking up the Economic Section (Figure 1) into a number of skeleton Divisions, eventually totalling seven (Figure 2); these Divisions they placed under the general category of "Economic Studies." The real problem, however, was finding the people to man these Divisions and to plan their eventual work in the field. To

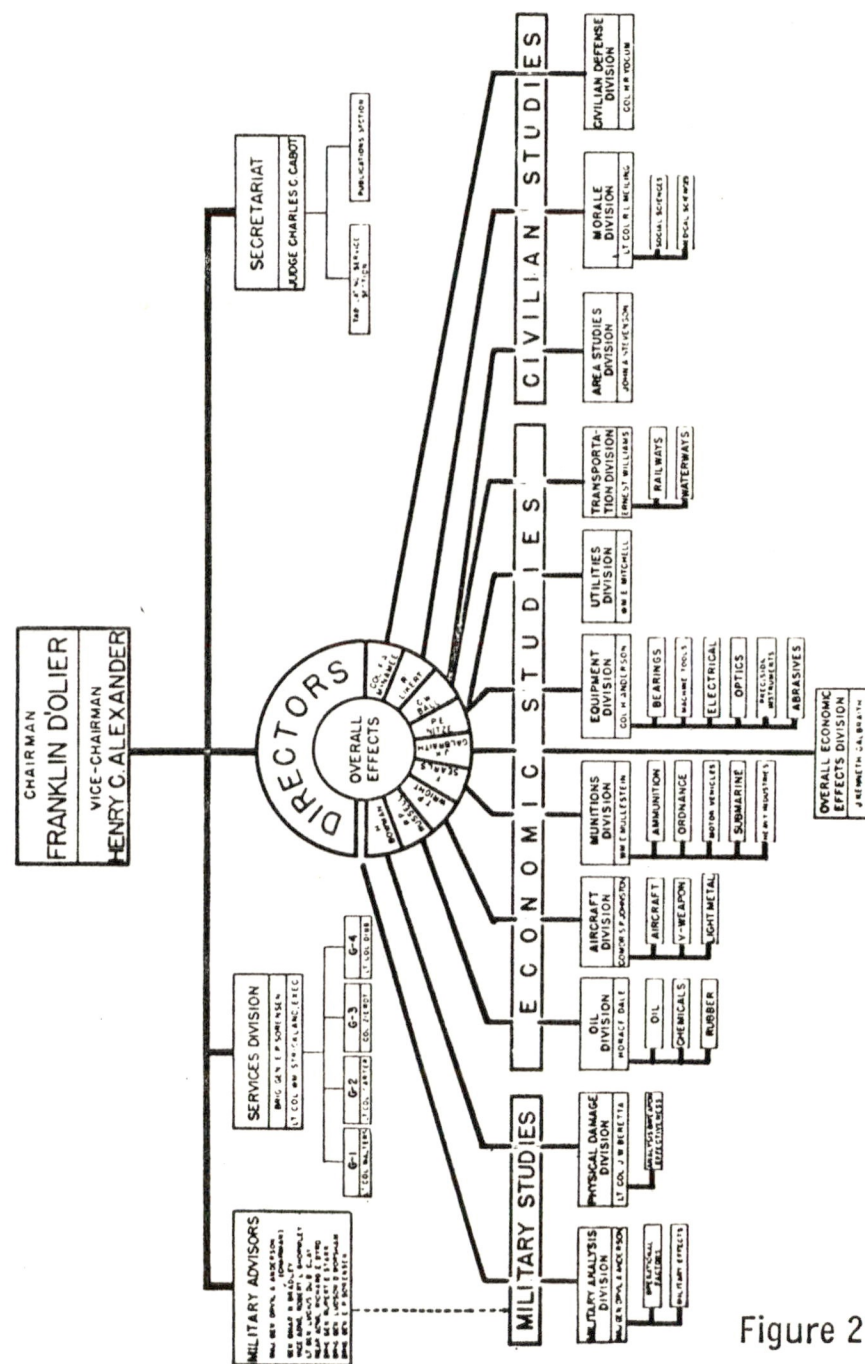


Figure 2

answer this need the decision was made to break up the original Physical Damage Section, parcelling out most of its people to the new Divisions and cutting back considerably on the emphasis originally accorded to the analysis of bomb damage effects. This rearrangement reflected a profound realignment of priorities by the civilian directors, and merits some consideration.

Prior to the appointment of Mr. D'Olier and his associates, the purposes the Survey was to serve were more parochially military than they were eventually to become. The measurement of the economic effects of bombing, while always an element of the proposed investigation, was nevertheless one factor among many. On at least an equal level were planned investigations into the following: physical damage to structures caused by various weapons and delivery techniques; the effects of bombing on German morale, both military and civilian; the effects of bombing on decisions of the German high command; and evaluation of the principles and techniques of target selection. From the first meetings of D'Olier's original group in Washington, however, the gradually increasing importance of the economic investigation became apparent. This was due in part to the decision to arrange the investigation along the lines of particular industries (oil, aircraft, munitions, etc.). The next decision—to select a director for each major industrial target system—had the effect, *whether they intended it to or not*, of greatly escalating the importance of what had once been various subdivisions of the proposed economic investigation. In a very real sense, organization determines policy.

As related earlier, upon arrival in London the directors found the organization of the physical damage investigation well advanced and that of the economic investigation hardly off the ground. They responded with two avenues of approach. The first, principally the work of Colonel Perera and then of Mr. Nitze, was a determined effort to devise some model whereby to measure the over-all or cumulative economic effects. The second avenue was to charge each of the "industrial directors" with analyzing the production loss attributable to bombing in his own area of responsibility. Using the results of both approaches, a top-flight economist (to be designated as director of an Overall Economic Effects Division) would then prepare a general report covering all industries. Faced with translating this policy into effect, it was all but inevitable that Alexander and Nitze would seize upon the well organized and well

staffed Physical Damage Section to provide the necessary manpower. Planning the operations of the other Divisions could not be allowed to wait upon the completion of the slow moving recruitment program in Washington.

One additional factor contributed to the decision to reduce the emphasis originally accorded to physical damage studies. This was the growing conviction of Nitze in particular that those engaged in such studies were overly concerned with drawing up an infinite number of highly technical reports, overly larded with "fancy" drawings, isometric models, and other elements of the language of structural engineering, on the whole incomprehensible to laymen. However valuable such reports might be to scientists was less Nitze's concern than was getting on with the larger task of coming up with broad conclusions and recommendations on the conduct of the offensive as a whole. Announced in late January, the rape of the Physical Damage Division (as it was finally designated) was completed by the middle of March.⁵⁵

As shown in Figure 2, the final organization of the Survey included another five Divisions beyond the Services Division and the seven Divisions under Economic Studies. These were, under "Military Studies," a Military Analysis Division⁵⁶ and the reduced Physical Damage Division; and under "Civilian Studies," the Civilian Defense Division (Colonel McNamee), the Morale Division (Rensis Likert), and, one of the last to be formed, an Area Studies Division, a group under George Ball's general direction that would seek to weigh the effects of the RAF "area attacks." Thus Ball (Transportation and Area Studies), like Nitze (Equipment and Utilities), was officially responsible for the activities of two Divisions. There were thirteen Divisions in all, every one of them to be dwarfed in size by the Secretariat (see below) when the time finally came to translate findings into reports.⁵⁷

Imparting a Sense of Direction to the Effort

Structural organization was one thing; devising a coherent and comprehensive intellectual approach to the undertaking as a whole was a problem of a higher order. Where Nitze had taken the lead in forcing through the reorganization into multiple Divisions, Alexander took it upon himself to supervise the attempt to define, in

advance of actual operations on the continent, the overall scope and limits of the task. In addition to encouraging the early efforts of Perera and Nitze to devise an overall model for the economic study, Alexander sought help from another quarter. In December he prevailed upon Major General F. L. Anderson at USSTAF to release to the Survey Colonel James B. Ames. Writing to Anderson, Alexander explained that

From all we have heard, we believe that he has the background and is equipped with the capabilities for occupying . . . a very key post in our organization. This position should act as a kind of control point for the intellectual phases of our work. For instance, we must make at least a tentative determination now of the subject matter of the final report, in order that the training of our Field Teams and the on the ground information to be obtained by them will supply answers to the questions in which we are interested. . . . In other words, all of us in our organization, from the Chairman to the Field Team workers, must know what it is we are seeking; otherwise, . . . we will lack consistent direction. Unless we have this, much material gathered will be irrelevant, and much relevant material will not be gathered.⁵⁸

So after an absence of several months, Colonel Ames returned to the Survey in January as Mr. Alexander's personal assistant. Drawing on Ames, Nitze, and Perera, Alexander sat down and drew up a tentative outline of what would be included in the Survey's final report. This outline, continually circulated among the directors and revised innumerable times, listed each topic for investigation and designated the Division or person primarily responsible for gathering data under each heading. Begun in January, this task was not completed until August; the final outline of topics forms the Table of Contents to the *Over-all Report (European War)*.⁵⁹

As work on the outline continued it became apparent to Alexander that not only the chairman's final report, but also the reports to be prepared by the individual Divisions, would have to be organized and edited in some consistent manner. Unable to take all of this on his own shoulders, and harking to the advice of Ames and George Ball, he began to lay plans for the creation of a Secretariat. Early in March, Mr. D'Olier (in Washington) invited a former partner in Colonel Ames's Boston law firm to become secretary to the Survey. Then serving as an associate justice of the Superior Court of the Commonwealth of Massachusetts, Judge Charles C.

Cabot obtained a leave of absence from the governor (until 1 October) and departed Boston for London.⁶⁰

A last-minute addition to the Survey's organization, the Secretariat grew by leaps and bounds. At its top level was in essence a "board of editors," headed by Cabot with help from Ames and Perera.⁶¹ Its first efforts were devoted to devising standard formats for the two basic types of reports that each Division would write: "plant" (or factory) reports and "ministerial" reports.⁶² As time passed the Secretariat became responsible for coordinating and drawing up in final form any procedure that had across-the-board applicability, e.g., standard checklists and questionnaires to be completed during the inspection of each industrial target. When a decision was made to adopt an IBM punch card system for compiling the record of USSTAF and RAF attack data, the Secretariat expanded to include a Tabulating Services Section.⁶³ Still later, when the final reports were being prepared, the entire publishing effort (typing, editing, proofing, printing) was centered in a Publications Section that came to employ some 487 persons, many of them on loan from USSTAF.

Time passed, but one ugly problem would not go away. Just exactly *how* would the Survey go about measuring precisely the production loss attributable to bombing?

To determine what production would have been in the absence of bombing, we will start out by examining the German plans of production; subtracting actual from planned output, however, will by no means yield the loss due to bombing. . . . In the U. S., for example, actual production frequently fell below planned production by as much as 30-40% even though we have never been bombed. In the second place, bombing may result not only in actual output falling below planned; it may also lead to the plans themselves being revised downward. . . . In the third place, we cannot accept the production plans of the Germans at their face value without a preliminary analysis to determine whether they are realizable goals or merely wishful thinking.⁶⁴

Added to the conceptual problem were others. *All* targets could not be visited owing to limitations of time, people, and proposed occupation zones. So some sort of sampling method would be necessary. And always there was the persistent problem of time; not only was Washington demanding answers, but in addition the civilian experts had been told they could go home after sixty to ninety days on the job. Some sort of compromise, it became clear,

would be necessary.

Although never precisely set down in written form, the basic trend of the approach became this: Field Teams would investigate as many important targets as possible; in doing so they would compile comparable data on as many levels as possible—by visual inspection and measurement, interviewing workers and plant officials, inspecting production records, compiling data on receipts from sales, even measuring the flow into plants of electric power thereby to interpolate varying rates of plant activity; at the same time, other Field Teams would search the various German ministries and military headquarters for statistical and analytical reports of value; still other Teams would have as their “targets” particular persons (Speer, Goering, Willy Messerschmidt, Kurt Tank) presumed to have special knowledge of bombing effects and resultant decisions; all the information, whether compiled by inspection, from captured records, or from interrogation, would then flow back to Survey headquarters; the directors, capable but only human, would then put their heads together and draw the most reasonable conclusions of which they were capable from the data available.

If not exactly an acceptable technique for the laboratory, this general approach was nevertheless the best available in the circumstances. It included capabilities for cross-checking data (power input vs. production output, attendance records compared to production levels and contrasted with reports of witnesses, etc.); it put qualified experts on the scene to make the all-important initial findings; it established a central control point to which all data would flow; and it provided, in the persons of the directors, capable men, well schooled in the business of making important decisions, often in the absence of as much information as might be useful. In short, the Survey was like any other committee except in one important respect; unlike many, it had in the person of Henry Clay Alexander a real *leader*, admired by all his associates and enjoying the complete confidence of his “superiors” in Washington, whether civilian (D’Olier, Lovett, Stimson) or military (Arnold, Fairchild, Kuter).⁶⁵

CHAPTER FIVE

THE SURVEY AT WORK: IN THE FIELD AND AT THE CONFERENCE TABLE

I arrived over Essen at a height of 6,500 feet to avoid the air defences. I chose the spot where the blaze of light from the factories seemed brightest, and there threw my cargo of bombs, counting ten between each bomb and the next. It is impossible to say what effect the bombs had among the blazing factory chimneys below.

Sergeant Aviator Maxime Gallois
reporting in *Flight*, 12 July 1917

In making our search for records it was necessary to crawl around on our stomachs; otherwise we would have exposed ourselves through the windows and drawn fire from the Germans. This worked out pretty well because most of the records were on the floor anyway.

From the report of a USSBS Spearhead Team,
on the heels of the retreating *Wehrmacht*,
April 1945

The opening chapter concluded with a brief sketch of the air war up to the point in the spring of 1944 when formal control of the air forces passed to General Eisenhower. It seems appropriate to bring that sketch up to date before turning to the Easter meeting of the Survey at Cologne.

The differences of opinion over whether to concentrate on oil targets or transportation targets continued to exist after April 1944.

Nevertheless, the great majority of missions flown during April, May, and June were directed against transportation centers and military concentrations behind the German lines in France, the Low Countries, and Germany west of the Rhine. For idealists of the theory of strategic bombing aimed at the enemy's sustaining war economy, these were dark days. Whatever progress had been made, they felt, was now being jeopardized, the Germans being given an opportunity to recuperate. Generals Eisenhower and Spaatz, much to their credit, held to a middle position between extremists of both sides, between those who would abandon, if they could, tactical support missions and those who urged that the *entire* air effort be used in direct support of the Ground Forces.

For Spaatz the only real question was how best to assure air superiority over the assault beaches. Patiently, and with imposing tact, he worked to convince Eisenhower that the answer lay in the destruction of the *Luftwaffe* in the battle in the air, and that the surest way to flush the German fighters out of hiding to face combat in the sky was to concentrate on the *Luftwaffe*'s fuel supply. Late in April, Eisenhower gave Spaatz verbal permission to strike at German oil refineries when the weather over Germany was such as to promise good results from daylight visual bombing. The first such raid took place on 12 May, against targets located near Zwickau, Merseburg-Leuna, Brück, Lützen, Böhlen, and other cities. "I shall never forget the date May 12," Albert Speer would later write.

On that day the technological war was decided. Until then we had managed to produce approximately as many weapons as the armed forces needed, in spite of their considerable losses. But with the attack of nine hundred and thirty-five daylight bombers of the American Eighth Air Force upon several fuel plants in central and eastern Germany, a new era in the air war began. It meant the end of German armaments production.¹

On 28 and 29 May, General Doolittle's Eighth Air Force conducted successful raids against synthetic oil plants deep in central Germany. General Twining's Fifteenth Air Force had been conducting similar attacks since April against oil targets around Ploesti and Vienna. Each of these raids proved costly in both crews and aircraft, but Spaatz's main contention proved out—the German Air Force rose with fury to repel, unsuccessfully, these attacks. The full extent of the German pilot losses was revealed to Reichsmarschal Goering in late

May when he was informed that the losses were critically in excess of the *Luftwaffe*'s programmed replacement capacity. Like the attacks in February against aircraft production, the attacks in May against aviation fuel production seriously crippled, but did not destroy, a critical industry. Taken together, however, and far more important in view of the upcoming invasion, they did destroy the *Luftwaffe*'s capability either to defend Germany or oppose the invasion.

On D-Day the German Air Force did not contest the landings at Normandy. The mission of the strategic air offensive, as defined at Casablanca and in the C.B.O. Plan, had been so to weaken Germany "as to permit initiation of combined operations on the Continent." This had been accomplished; the strategic air offensive, when measured against its assignment, had proved an unqualified success. All this is not to say that the transportation attacks during April and May were without effect in limiting the *Wehrmacht*'s capability to redeploy forces in opposition to the landings at Normandy, an undeniably important consideration. What it *does* say, however, is that exclusive concentration on the transportation attacks would not have allowed successful achievement of the *air* forces mission—assured air superiority over the intended point of assault.

In Eisenhower's eyes General Spaatz's stature, always high, rose even higher. Two days after D-Day the supreme commander agreed that oil was now the number one priority. For the next three months Spaatz's bombers flew missions against oil targets whenever the weather permitted. Yet even as before the majority of sorties during the third quarter of 1944 were flown against targets less palatable to the air planners.

From June through August there were almost daily requests for bombing missions in direct support of the ground forces trying to break out from the lodgement at Normandy. Then V-1s started hitting London beginning on 12 June, followed by V-2s beginning in September, leading to urgently repeated requests to attack the launching sites. (The British, understandably, wanted the launching sites destroyed; but Air Marshal Harris of RAF Bomber Command, citing the greater accuracy of the American forces, insisted that the Eighth Air Force should take on such missions. General Spaatz, also understandably, was not pleased to have his arguments on accuracy thus turned back on him.)

It was Spaatz's fate throughout 1944 to have to contend with an almost limitless variety of ideas on how to use the bombers under his

command. As was his way, however, he was careful to keep his most phlegmatic comments to himself in an informal diary maintained in his office. At one point in June, after a conference at SHAEF, he wrote despairingly of Eisenhower's suggestion about using B-17s to drop supplies to partisans in southern France, and of "Leigh-Mallory and Monty, who visualize the best use of our tremendous air potential as plowing up several square miles of terrain in front of the ground forces to obtain a few miles of advance!" Despite the rapidly increasing numbers of available aircraft—more than 2,000 in RAF Bomber Command, more than 2,000 in the Eighth Air Force, more than 1,000 in the Fifteenth Air Force—there seemed always to be one obstacle or another to the hope of throwing the whole force over Germany for any considerable length of time; the promise of "Big Week" back in February seemed forever one step beyond reach.

From July through November, the Eighth Air Force, using "its rare days of freedom from commitments to help the land forces," pressed home the attack against the German oil industry.² During this period the ground armies broke loose from Normandy and swept across France, only to be halted short of the Rhine by logistical shortcomings. It is to the apparent stalemate that loomed on the horizon in October 1944 that one must look to understand how, in the last six months of the war, the strategic air forces moved further and further away from what had been their original goals; and how a club was fashioned from what had been intended as a sword.

With the failure of the effort to cross the Rhine during September, the overriding concern of all Allied planners became finding some way to bring sufficient force to bear on Germany to force a surrender. If the Rhine "proves sticky as a barrier," Spaatz wrote Arnold early in October, "it may still be possible to beat up the insides of Germany enough by air action to cause her to collapse next spring, particularly if the Russians continue pressure against the eastern area."³ Air leaders were not alone in suggesting that air action might be the answer to present difficulties. While on a visit to the European theater shortly thereafter, General Marshall...

had taken the initiative in formulating plans to bring about the defeat of Germany by 1 January 1945. The chief of staff in discussions with air leaders made it clear that he was not satisfied that full pressure had been put in the right places, and he suggested that long-range objectives of strategic bombard-

ment be abandoned for an all out effort to force an early victory.⁴

In the face of such suggestions emanating from the very pillar of authority, one should not be surprised that slowly, but nonetheless perceptibly, the American air forces drifted away from their intended precision attack, and came to meld their efforts with those of RAF Bomber Command in an effort to club Germany into surrender. Also affecting this trend, however, were operational factors.

As winter approached, the typically horrid flying weather over Germany returned. Yet by then the potential force available to USSTAF was so great, and the situation on the ground so disappointing, that it was unthinkable not to use the bombers simply because visual bombing was not possible. If Parkinson is right in holding that "work expands to fill the time available," a corollary might be suggested to the effect that "the degree of military force applied tends to expand to match the capability available." Whether or not valid in any general sense,⁵ this corollary does suggest what happened to the strategic air war between October 1944 and April 1945. To be sure, in most cases the targets selected for attack were still identified as those producing oil, aircraft, munitions, motor transport, and so forth. But the bombing techniques required by the cloud cover over most targets were in no sense capable of providing results in line with the American doctrine of precision bombardment. The official history, perhaps unconsciously, puts the case succinctly: "... radar bombing was better than no bombing."⁶

When Hitler launched his Ardennes Offensive in December 1944, the determination of the Allied commanders somehow, once and for all, to put an end to the war increased. Making matters worse was the appearance late in 1944 of jet aircraft among the German defensive fighter force. This development caused General Spaatz grave concern and added to his growing fear that the V-1 and V-2 weapons might represent only the beginning of a special bag of tricks that Hitler was preparing to employ.⁷ Wherever he looked, Spaatz had reason to feel that he would be remiss in his duty if he failed to launch every possible mission, regardless of weather conditions over the chosen target, and, yes, if it got to that, regardless of the precise detail in which were couched the target directives of the Combined Chiefs of Staff.⁸ And lest Spaatz fail to investigate every possibility

for the employment of his forces, General Arnold back in Washington reminded him that

We have a superiority of at least 5 to 1 now against Germany and yet, in spite of all our hopes, anticipations, dreams and plans, we have as yet not been able to capitalize to the extent which we should. We may not be able to force capitulation of the Germans by air attacks, but on the other hand, with this tremendous striking power, it would seem to me that we should get much better and much more decisive results than we are getting now.⁹

So despite the earnest intentions of Spaatz, Eaker, and Assistant Secretary Lovett, the Army Air Forces drifted toward a concerted attack against Germany that came more and more to be characterized by techniques reflecting "area" rather than "precision" attack. The attacks of 1945 against Dresden, Berlin, and the Ruhr industrial area cannot, afterthoughts to the contrary, be called precision attacks.¹⁰ Near the end of his account, one commentator on these events offered one explanation of what had happened during the closing months of the air war.

A force designed as a precision instrument had become one expressing the concept of total war. *This change had not been intentional* and the fact of the change taking place would certainly be denied by most senior American officers who held high command in these concluding months. But the record is against them. It is a record of industrial destruction, wrought during the course of an area offensive; it is not a record of industrial destruction as seen in the determination to bomb Schweinfurt or Regensburg or aircraft factories or oil installations or transport centres. As with most other aspects of the strategic air offensive, *it is probably the case that this change was inevitable*, certainly once strategic objectives became superseded by those derived from the doctrine of unconditional surrender. Perhaps all one can say is that nothing more aptly illustrates the near-impossibility of returning to strategic first principles once the pressure of events and changes [in] political circumstances have blunted or distorted them.¹¹

Hard words, these, and reflecting deep-seated fears. Their author, Anthony Verrier, is journalist first and historian second, and the precise application of some of his words—e.g., "area offensive," "As with most other aspects of the strategic air offensive," etc.—may be adjudged too strong in the particular circumstances of which he writes.¹² It is nonetheless true that Verrier's conclusions accord very

closely with those of the American historian Kent Roberts Greenfield: "The moral of Tolstoi's *War and Peace* was receiving a fresh illustration. The grim logic of war had taken it out of the hands of the men charged with its direction."¹³

The view taken by Verrier and Greenfield, whatever its degree of validity, owes much to hindsight. For those charged with executing the strategic air offensive, the past and present realities outweighed any philosophical contemplation of future implications. To be fair to them, it is perhaps appropriate to conclude this sketch of the final months of the air offensive with some thoughts of the late General (USAF, Ret.) C. P. Cabell upon reading an earlier version of these pages in 1969.

What was so wrong, in the light of the realities of German practices over the five years of war, in seeking the attainment of victory? The sooner it came the sooner would it stop the war with its greater slaughter of Allied soldiers and civilians, as well as enemy civilians and soldiers. There would be a net reduction in deaths. To me the test was whether or not our bombing was wanton. I do not think it was, in spite of many urgings by all kinds of people—not just the military—for all kinds of bombing operations. . . . And it was not a strain on us military folk to keep it that way.

As for the comment from Craven and Cate cited in note 6, this chapter, that the "only" justification for the experiments with radar bombing "was the assumption that blind bombing was better than no bombing," General Cabell wrote:

The 'only' justification!? What about the imperative to develop the equipment and techniques to use, *in battle*, radar bombing so as to make ours an all-weather force? This would be needed in Japan, in future wars, and even currently in the European Theater in the event that the German jet fighter should have materialized as feared.¹⁴

When Franklin D'Olier and his colleagues convened at Cologne on Easter Sunday, 1945, the strategic air offensive was drawing quickly to a close.¹⁵ The Rhine had been crossed the week before and General Eisenhower, in a press conference on 28 March, had described Germany as a "whipped enemy." Now on the verge of their most important work, the members of the Survey would not worry themselves with the sorts of questions raised in the preceding paragraphs. From a vantage point thirty years later, it may seem surprising that they concerned themselves so little with tracing, step

by step, the *trend* of air operations. Yet if one considers the way they prepared themselves, the extent of their knowledge, and the politically explosive nature of some of the questions they *might* have raised, then surprise gives way to understanding.

As shown in the preceding chapter, the Survey members from the beginning structured their approach so as to concentrate on the economic effects of bombing on industries, whether discrete or interlocking. This resulted not only from the background briefings they were given on the origins of the theory of precision bombing, but also from the decision to make the top ranking civilian industrial advisors the core of the executive committee of directors. A second reason why basic questions about the *control* of bomber forces would tend to be overlooked lay in the relative innocence of the civilian members on questions of operational techniques, matters of technical and tactical feasibility, and the day-to-day decisions that had to be made in the improvised¹⁶ air war. Whereas the Survey was in possession of copies of all the target directives, its members were, for the most part, unaware of how often these had had to be ignored. Some members, however, particularly among the military, could also see that the intricacies of the whole question of bombing policy presented questions and problems that might better be put aside for the present.

The reader will recall that as early as December 1944 Mr. D'Olier had sought to downgrade the emphasis given to criticism of any sort; establishing the factual effects of the bombing that had taken place was to be the sole concern of the Survey's lower echelons. Evaluating the effects and criticizing, if appropriate, were to be the province of the directors, vice-chairman, and chairman. By March of 1945, however, the trend of thinking at the topmost level of the Survey reflected an increasing unwillingness to broach the difficult, perhaps imponderable, questions of bombing policy. This thinking is clearly revealed in a letter of 22 March 1945 from Colonel Perera to General Kuter.

It is the opinion of the undersigned that the directives under which the Survey is operating confine its scope to the appraisal of the effects of strategic bombardment and do not include the evaluation of the effort, or the conduct of operations. While it may be difficult to draw a line between these three factors, the report of the Survey should consist solely of findings of fact bearing upon the first. These findings, in turn, will assist competent military authority in determining the principles

involved in the planning, mounting, and conducting of future strategic bombardment operations and in laying down the necessary procedures to achieve their adoption and smooth application. This task would not be performed by the Survey; it would have to be undertaken by the proper military authorities at some time subsequent to the submission of the report of the Survey to the Secretary of War. It is agreed by all connected with the Survey that it will not operate as an investigating committee, but as an impartial finder of facts bearing upon the effects of our strategic bombardment operations in Europe. The above views have been expressed by the undersigned to both the Chairman and the Vice Chairman who are in accord therewith.¹⁷

Unclouded by Colonel Perera's curious blend of legal and military jargon is the clear statement that the sort of forceful critique envisaged by General Fairchild would not be forthcoming. Yet in a very real sense, no approach other than that described by Perera could seriously have been considered by the Survey. They *knew* by March of 1945 that they were simply not qualified to undertake criticism of either the conduct or the control of operations. In the time remaining and with the skills available to them, they could make a real effort to gather facts and compile data. Then they could go one step further: they could seek to determine the effects of bombing on both particular and general elements of the German war economy. That far they could go, but no further; to attempt to do anything more would be to go beyond their own evaluation of their competence to judge in such matters.

Finally, there were considerations of a personal and political nature that would tend to place limits on the extent of the Survey's evaluation. Mr. D'Olier, after all, had been "given a job to do" by General Arnold and Assistant Secretary Lovett. That Secretary of War Stimson and the President had signed certain papers was beside the point; D'Olier knew as well as anyone else that the Joint Chiefs of Staff were running the American side of the war. And now that war, at least in Europe, was drawing to a victorious close and there was still the war in the Pacific to go. What would be served by producing a contentious or critical report, one that singled out errors and named names? Arnold, Spaatz, Eaker, Doolittle, and all the others—men whom D'Olier had come to admire for their courage and their willingness to shoulder enormous responsibility—these men had led the way; thousands of others had given their lives.

Surely D'Olier must have felt that if he could help these men in some way by making clear what the effects of bombing had been, then well and good. But that his people would serve any useful purpose by raking them over the coals must have seemed a sterile prospect. If, as turned out to be the case, the final reckoning would include a number of major criticisms, it was nonetheless clear by April 1945 that fact-finding was the order of the day so far as the chairman was concerned.¹⁸

By the first of April when Mr. D'Olier, Judge Cabot, and Colonel Perera arrived at Cologne from Washington, the field investigations of the Survey were underway on a large scale. Twelve Field Teams were operating in the area around Cologne and Krefeld and five additional teams were in the more southern portions of Germany in and around Strasbourg and the Saar area. Within two weeks, twenty-six additional teams were scheduled to depart London for the continent. Comprising altogether 369 people, these teams joined another 110 men already on the continent running the various Regional Headquarters or performing liaison duties.¹⁹ For the meeting at Cologne Mr. Nitze had sent out instructions for the chiefs of each team to bring in from the field a summary of all data and experiences thus far collected and encountered.

The two days of meetings at Cologne resulted in a voluminous report to Mr. Alexander in Washington detailing the work thus far completed in the area north of the Moselle and west of the Rhine.²⁰ Received in Washington on 11 April, the report was edited by Alexander and Ball, presented to Assistant Secretary Lovett on the twelfth, and discussed with him in detail on the thirteenth. Expressing himself pleased with the effort to date, Lovett stressed the importance of speeding up both the collection of data and the reporting of conclusions, however tentative; the air offensive against Japan was finally underway in force and the Joint Target Group wanted every scrap of information it could get its hands on.²¹

For the next four months the main effort of the Survey was devoted to the field investigation. While a detailed account of the personnel and activities of each Field Team has been provided elsewhere,²² it is appropriate here to generalize from these accounts, showing by example the types of difficulties experienced by the teams, the means by which team members gathered information, and a few of the more notable adventures embarked upon. First the difficulties.

The first continuing problem for the investigators antedated the appointment of the chairman. The earliest experimental teams sent out by Colonel Koenig, when meeting up with the ground forces in France, had great difficulty explaining who they were and what their business was. At every point they were asked, "Where, in writing, is your authority?"²³ After formal activation of the Survey, team leaders were provided copies of the implementing directives, but these did not necessarily solve the problem. "A true copy of our governing directives is not heavy enough ammunition for a junior officer to fire at a Colonel or General," bewailed one captain in his report of efforts to investigate the Renault plant near Paris.²⁴ Generally, nonrecognition by other Allied elements on the continent tended to be less of a problem as time passed—especially after D'Olier and his mission became common knowledge among the top commanders—but in some ways the problem persisted to the end. On more than one occasion the similarity of the initials USSBS (painted on Survey vehicles) to USSR led Germans who could read English to flee on sight.

Much more difficult was the problem occasioned by the Survey's being only one among many organizations actively engaged in gathering Intelligence information about the defeated enemy. As early as 1944 there had been established in London a Combined Intelligence Objectives Subcommittee (C.I.O.S.) whose mission was to coordinate the activities of all agencies that would be involved in post-hostilities investigations. But in the event, the natural competition that prevails among Intelligence agencies led to a thoroughly disordered situation. The original plan of the C.I.O.S. was that "T" (Task) Forces under SHAEF would seize certain Intelligence objectives and guard them until the arrival of the particular agency having priority in each case. In the confusion that accompanied the advance of the armies, however, Survey teams often found that one or another Intelligence agency had beaten them to the spot, sequestered the available records (or persons), and shipped them back to London or some other point. The interrelationship between this problem and others was recorded by Paul Nitze.

Writing to Henry Alexander in Washington, Nitze pointed out that the German measures for controlling documents had worked quite well. Noting that they had a procedure in force calling for the automatic destruction of all classified documents after six months unless an immediate operational necessity required otherwise, he

noted that they had also been very proficient about destroying documents whenever the Allied armies came near.

Furthermore, our combat troops, in the excitement of battle, have broken into most of the offices in which we are interested and have scattered the records helter-skelter. C. I. O. S., G-2 of SHAEF, O.S.S., the 30th Assault Group (on behalf of the British Admiralty), and other intelligence agencies have generally been next on the spot and have selected from the remaining documents those which appeared of interest. . . . Our field teams conducting their investigations on the spot are greatly handicapped by not having the important documents available there.²⁵

To combat the problem of being beaten to the spot by other agencies, the Survey established a number of "Spearhead Teams" whose function was to get there first and prevent the sequestration by others of the records of most interest to the investigators of the Field Teams of the various Divisions. Attaching themselves to advance units of the ground armies, members of the Spearhead Teams spent a good deal of their time dodging enemy bullets.²⁶ Remaining for the most part insoluble, however, was another problem cited by Nitze: the wanton destruction committed by Allied soldiers.

The predisposition of conquering troops to lay waste the abandoned properties of a defeated enemy has troubled (or exhilarated) battle commanders since warfare began. Especially during the final month of the war, the armies were moving too fast to bother with setting up tents for billeting overnight; the practice was simply to seize a building, expel the occupants, and make oneself at home. If a wine cellar could be located in the building or nearby, then the chances of the property's remaining undamaged would decrease proportionately. But conquering soldiers were only half the problem; bands of marauding DP's (displaced persons) released from forced labor or concentration camps swarmed over the countryside. Desperate for food, determined on revenge, and fired by liquor, they descended on villages, plundering, raping, and killing. For the Survey's Field Teams, the results of these depredations were sometimes discouraging. They had known in advance that the bombing itself would destroy many records; they assumed also that the retreating German armies and officials evacuating plants and ministries would destroy others; but the activities of Allied soldiers and marauding bands of Russians and Poles had not been foreseen.

The wanton destruction that has been carried out by our GI's, the liberated forced laborers, and by others in most industrial plants is beyond all description. Engineering departments, offices, accounting departments, and so forth have simply been turned upside down. Desks, chairs, typewriters, lamps, files, and everything else have been smashed up and spread indiscriminately on the floor. In most places you wade knee-deep in debris of that sort. The problem of getting worthwhile information out of records scattered as much as most records are is almost a hopeless one.²⁷

Even when production records were found in good condition, further problems were encountered. Statistical records, whether applicable to a single plant or an entire industry, were rarely complete over any considerable length of time;²⁸ the very bases on which figures were compiled involved semantic nuances whose logic was not always apparent to the investigators;²⁹ and increasingly evident among figures compiled late in the war was the perennial problem faced by those who place great faith in statistical reports—the compilers of statistics, under pressures from above, tended to become self-serving in their reports, either telling higher headquarters what they wanted to hear or fudging figures to cover up their own inadequacies.³⁰

A final problem for the Field Teams, though one not equal in scale to those already mentioned, was that occasioned by the questionable conduct of some team members. As reported by one team leader, "looting and general enjoyment of the privileges of conquerors provide very strong attractions to those whose zeal for research is not personal." So-called "improper looting" and "the yen to go sightseeing" had continually to be combated, and on a few occasions civilian members had to be disciplined for trying to obtain information of more direct use to their parent corporations in the U.S. than to the goals of the Survey. Also not infrequent was a tendency among some of the higher ranking civilians (not the directors) to take their "assimilated rank" to mean that they could give orders to soldiers on matters not related to research. Some who held the assimilated rank of colonel, and hence were referred to colloquially by the military as "ass colonels," managed on occasion to make of themselves just that. Summing up problems of this sort, one team leader reported that

In general, there is less than 50 percent operating efficiency as compared to a similar civilian research job in the States. The research director will always be faced by conditions far from ideal as each of his personnel will be a researcher, administrator, and a soldier—and he may be none of these things by inclination.³¹

These, then, were some of the problems faced by the Survey's investigators in the field. They have been treated at some length not to detract in any way from the value of the work performed by the Field Teams, but rather to make clear the turbulent milieu in which the investigators worked. Theirs was no simple research task, its parameters and implications fully identified beforehand. Rather, they found themselves in an unreal world performing an unprecedented task in the midst of extremes of every sort. Writing to T. P. Wright late in April, Commander Johnston vividly captured the scene.

Kassel was a complete wreck. Until you have seen one of these ruined cities you cannot really believe what they are like. In all of the central part of Kassel there did not appear to be a single habitable dwelling or other building. The place is simply a mass of rubble. Where the people are living is beyond me except that we did see quite a few who were apparently existing in the cellars. When we were there the town had been taken only about two weeks before, and the people were just beginning to drift back and were trying to make some sense out of what they had left. . . . Again, as in Frankfurt, we were able to secure the services of liberated Russians to perform the housekeeping jobs. These people appeared to be perfectly willing to do any amount of work simply for their food and lodging.

Incidentally, everyone in Germany appears to be on the move. The roadsides are lined with groups of old men, women, and children, all going someplace, either carrying what things they can or pushing small carts, baby carriages, or anything that will hold what is left of their possessions. The astonishing part of it is that the people are for the most part very well dressed and appear to be in excellent physical condition. This is true of the people we saw in the cities and the people in the country. You also see on the road many groups of men, apparently from the forced labor camps, who are heading back towards their own countries. You will see six or eight men in non-descript uniforms tramping along together, possibly carrying a French flag or some sort of arm band or other identifying mark. Some of them are riding in "liberated" vehicles, but most of them are on foot.

Frequently large convoys of POW's go along packed solidly in huge Army trucks. We passed several POW enclosures on the way. Besides the human wreckage on the road, the ditches are full of burnt and broken military vehicles, anything from jeeps up to tanks, both German and American. All along the way, however, in spite of the evident disruption of war, the people are out tilling the fields. Everyone seems to be busy and the orchards and gardens everywhere looked very well organized.³²

The basic techniques of the Field Teams have already been described: armed with detailed Target Folders and standardized checklists, their object was to get themselves on the scene at selected targets as quickly as possible, there to gather evidence via interrogation, photography, and the interpretation of surviving records. Speed, energy, and ingenuity were essential; also helpful was an occasional tribute paid to the vagaries of human nature. Early in the investigation it was found that it never hurt to have along a supply of cigarettes, pipe tobacco, soap, coffee, tea, and chocolate wherewith to encourage cooperation from those whose taste for such delicacies exceeded their ability to lay hands on them.³³ In a similar vein, it did not take long to realize that a certain degree of judicious deception might be made to pay dividends.

Inasmuch as the German city officials seem willing to assume that any effort on the part of American military personnel to evaluate the effect of bombing on the city must be aimed at eventual reconstruction of the city, and are, therefore, exceptionally willing to cooperate with USSBS personnel, *the actual mission of the Survey teams should be treated as Top Secret*. It should not be necessary to give reasons for our interest . . . but any explanation need mention only that it will be necessary for you to ascertain bomb damage and the general effects of bombing "before proceeding with your work."

Corporal Richter made a special effort to avoid the use of the word "Survey" in the course of all discussions. Our object was to conceal the actual purpose of our mission in order to obtain fullest cooperation on the grounds that the city authorities seem to be anxious to believe that we are in some way connected with the U. S. Military Government and seek to bring them material aid in reconstruction. . . .³⁴

For all the careful laying of plans, however, timely displays of ingenuity and resourcefulness accounted for much that the investi-

gators were able to accomplish. A few examples must suffice.

Recruiting in the aircraft and light metals (principally aluminum) industries had proved especially difficult, owing to the immediacy and priority of their production to the war effort. Also troublesome had been the procurement of aircraft to move the Field Teams from place to place on the continent. A lucky coincidence and some fast talking by Commander Johnston late in April went a long way towards solving both of these unrelated problems. One morning he received word that a group of some twenty aircraft production experts, brought together at Wright Field to form a post-hostilities Air Technical Intelligence group, had arrived in London earlier than expected. The officer in charge, Major General K. B. Wolfe of Air Technical Service Command, was so pleased with Johnston's offer to keep his group occupied for several weeks that he graciously offered to let the Survey use the three C-47 transports he had at his disposal.³⁵ The energetic tracking down of unexpected leads became the norm on the continent.

One very busy and highly effective group of three men was the Interrogation Section of G-2, Services Division, made up of Captain George M. Perry, Lieutenant Wolfgang G. Sklarz, and Lieutenant Walter A. Steene. It was Perry, for example, who entered Schweinfurt with the Infantry and captured Georg Schafer, owner of the company that controlled forty percent of German ball-bearing manufacture (*Kugelfischerwerke*) and head of the government's Ball-bearing Production Board. It was also Perry, on 10 May at Salzburg, who interrogated two Polish Jews, just escaped from a concentration camp. These men told of being on a team of engravers and printers, under control of Himmler's ministry, who had counterfeited 130 million British pounds. Perry's fast work resulted in keeping at least sixty million pounds from entering circulation. It was Sklarz, at Flensburg and also on 10 May, whose alertness uncovered the hiding place of Albert Speer, Hitler's minister for armaments. Quickly summoning other members of the Survey to the scene, Sklarz conducted a series of interrogations of Speer lasting some ten days. Steene, though not responsible for any such coup, was nonetheless exceptionally valuable during interrogations by virtue of his ability to take shorthand notes in German.³⁶

Lieutenant Peter Jacobi was with a Field Team that entered Essen two days after hostilities ceased there in early April. Heading straight for the main offices of the Krupp works, he found all the

important officers of the company still on the scene. Perhaps because it seemed the efficient thing to do, or perhaps because the opportunity was too much to pass up, he forthwith called a meeting of the board of directors. Among those interrogated at some length were Friedrich and Alfried Krupp.³⁷

Believed to be the first USSBS man to cross the Rhine was Major (Flight Surgeon) Cortes F. Enloe of the Medical Branch, Morale Division. Attaching himself to the Tenth Armored Division, Enloe entered Heidelberg while it was still under fire. His "target" was the Kaiser Wilhelm Institute for Medical Research, and more particularly its director, Reichard Kuhn, a Nobel laureate for his work in vitamin research, and Kuhn's assistant, a Professor Boethe who had been Enloe's professor at Heidelberg in the early thirties. After two days of interrogating both men in their laboratories, Enloe became suspicious that Boethe was concealing from him the nature of his most important research; Boethe was primarily a physicist and the visible equipment in the labs appeared to extend beyond that needed for medical research. Playing on some mutual jealousies and rivalries between departments, Enloe got Kuhn to admit that Boethe had been at work at Mordau in the Black Forest on short wave radio research. While this lead was tracked down by others, Enloe then got Kuhn, who was also president of the German Chemical Society, to reveal the hiding place of the Society's library, considered the most complete of its kind in the world. The uncovering of the library, located in a cave near Rupertsfeld, some seventeen miles southeast of Berlin, involved entrance through the back of an inn, secret passageways, and mysterious passwords.³⁸

While exploits of the sort mentioned here were atypical of the essential drudgery that characterized much of the work of the Field Teams, they were not as atypical as one might assume. Another example was the discovery by Colonel Peter Beasley (from AAF Headquarters, working with the Aircraft Division) in the Hartz mountains of the organizational records of the Speer ministry, the personal files of Speer (including a house-by-house, factory-by-factory record of bomb damage in Berlin through February 1945), the records of the German Institute for Economic Research, and forty-one lead-lined boxes containing design data on jet engines, V-1 and V-2 weapons, and poison gases. Hopefully Beasley was wrong in his statement that "The whole of the next war was there." Still another example was the discovery by IBM experts of the Tabulating

Services Section of 150 tabulating machines in the cellar of a brewery and another 140 in a small inn near Salfeld. All of this equipment was put to good use in compiling statistical data of concern to the Survey.³⁹

But in the end, the adventure most likely to attract the imaginative powers of a television script writer was that entered upon by Colonel Ames when he led a "raiding party" into Russian-occupied Berlin in July. Accompanying Ames were Captain L. Van B. Nichols (Equipment Division), Lieutenant Max Weingarten (Munitions Division), Technical Sergeant Paul Baran⁴⁰ (Overall Economic Effects), and Sergeant Alfred Krause, driver of the jeep they airlifted into Berlin with them. Arriving at Tempelhof on the afternoon of Monday, 16 July, the team unloaded their equipment and checked in with the senior American military officials in the western zone of the city. They then set out immediately after their primary target, Dr. Rolf Wagenfuehr, formerly chief economist and statistician of the Planning Board of the Speer Ministry.

Not finding him at his home, they then visited one of his associates, a man personally known to Paul Baran. After some academic small talk about their former associates at Harvard, Baran convinced his friend to arrange a meeting with Wagenfuehr the following morning. At this meeting Baran obtained a copy of a book manuscript of some 130 pages that Wagenfuehr had just completed on the history of the German economy from 1919 to 1945.⁴¹ Baran spent the whole day and part of the next with Wagenfuehr, trying to get him to agree to leave Berlin to work with the Survey for a few weeks. Wagenfuehr, however, had surrendered to the Russians and was now working for them.

Giving up on Wagenfuehr for the time being, Ames and Baran followed another lead to a Dr. Passauer who had been charged by the German Air Ministry with compiling a continuing record of the effects of Allied bombing in Germany. Passauer's papers were still in a safe in the Air Ministry, but Passauer had a key and agreed to sketch a map of the interior of the building. Late in the evening of the following day,

Lt. Weingarten and Sgt. Baran penetrated the building of the Reichsluftfahrtministerium, and with the key and diagram which Dr. Passauer had given them, found and opened the safe containing his records. . . . As this building of the Air Ministry

was in the Russian Zone, and guarded by a Russian sentry, the operation was somewhat of an exploit.⁴²

Throughout their week in Berlin, the other members of the team visited a series of targets of interest to the Transportation, Munitions, and Equipment Divisions, occasionally penetrating the Russian Zone and cracking a few more safes in the process. Two excerpts from their report give a vivid picture of the scene in Berlin.

(Thursday, 19 July) On the way from the General Direktion we drove through the heart of the administrative section of Berlin, along the Wilhelmstrasse past the Reichs Chancellry where a group of Americans, British and Russians were about to be taken on a guided tour through the famous bunker where Hitler, Eva Braun and the Goebbels family are supposed to have died; on to Unter den Linden, past the Adlon, through Pariser Platz with the ruins of the French Embassy (which until it was bombed out housed the Speer Ministry), and stared across at the ruins of the American Embassy; through the Brandenburg Gate, still relatively intact, but looking the worse for wear, and into the Tiergarten. All of this section of the city is an utter shambles. Those buildings that have not been turned into a heap of rubble stand roofless, partially wallless, gutted by fire, beyond possible repair. The Tiergarten looks like a no man's land. Its trees have been stripped of all but the largest branches, and are leafing from the trunks. As elsewhere in the city the grassplots now contain the bodies of many Russian and German soldiers who fell in the street fighting. Perhaps more grotesque than anything are the remains of Berlin's statuary, of which there was a plethora; horses without their former riders, figures without heads or limbs.

(Sunday, 22 July) In the late afternoon a savage windstorm sprang up, lifting half the dust and rubble of the city and distributing it around indiscriminately. The remaining pieces of glass in windowless Berlin were flying through the air; documents and papers which had been tossed outside in an effort to clean up buildings soared heavenwards; the walls of some gutted buildings collapsed; the atmosphere was opaque. Later in the evening the wind died, in order to give the mosquitoes, breeding in the stagnant canals and static water pools, a chance to come out for their usual night life, while the team observed the ten-thirty curfew.

Meeting together late in the evening of Monday, 23 July, the team decided "that the time had come to get hold of Wagenfuehr once

and for all." Accordingly, in the dead of night Ames, Weingarten, and Baran set off once again into the Russian Zone. Upon finding the house in which Wagenfuehr was staying, they woke him, forced him to get dressed, and took him into custody. The following day he was spirited out of Berlin on a C-47 by Captain Nichols, and Colonel Ames was left with the task of explaining to the Russian authorities why it had been felt necessary to borrow the services of their man Wagenfuehr for a few weeks. "Both at this time and on two subsequent visits," the team reported laconically, "Major Zurlin Lvov of the Russian Economic Administration was not in, which may have been just as well."⁴³

No account of Field Team activities would be complete without a record of the names of those killed and wounded in the performance of duty. On 4 May near Chemnitz a team from the Machine Tools Section of the Equipment Division ran up against a German roadblock. The Germans opened fire, killing one soldier and one civilian, and wounding two other civilians. On 20 May, the explosion of an undetected land mine near Bookhorn resulted in an identical casualty toll. The Survey's ultimate Roll of Honor reads as follows:

Killed

Mr. Thomas M. Skove, Cleveland Twist Drill Co.
Mr. Rudolph Nadel, Mabon and Company, New York City
Staff Sergeant Albert H. Johnson
Private First Class Rodney E. Jacobson

Wounded

Mr. Benjamin W. Bickle
Mr. Lawrence A. Beaudin
Mr. Harold W. Carson
Mr. Albert C. Ingersoll⁴⁴

While the Field Teams worked over targets in Germany, joined occasionally by the various directors, a number of events occurred at the topmost level of the Survey that require brief mention here. Among the most important of these was the continually increasing prominence of Paul Nitze, who came to occupy a position roughly on a par with Alexander and D'Olier. Writing to Professor Bowman on 1 May 1945, the chief of the Physical Damage Division described Nitze's role as follows:

At times that Mr. Alexander has been here, Mr. Nitze occupies an adjoining office as his assistant. At the time Mr. Alexander left and Mr. D'Olier had not yet arrived, Mr. Nitze acted in the capacity of Chairman of the Survey in addition to his other duties. Since Mr. D'Olier has been here Mr. Nitze has been acting as Assistant Chairman. At all of the staff meetings he sits at Mr. D'Olier's elbow and to all intents and purposes acts as a presiding officer in the meetings. Due to his ability, Mr. D'Olier has leaned very heavily on him and I feel that many of the policies of the Survey are definitely set by Mr. Nitze due to the confidence that higher authority has in him.⁴⁵

Another important development was the arrival in April of J. Kenneth Galbraith to direct the Overall Economic Effects Division.⁴⁶ As mentioned earlier, the search for a top-flight economist had been long and arduous. From the beginning, Assistant Secretary Lovett had all but insisted that the Harvard Graduate School of Business Administration play some part in the Survey. Both he and D'Olier corresponded at length with Donald David, dean of the Business School, and sought in vain to get either David or one of his top professors to head the economic study. One after another, various prospective candidates fell by the wayside, either from lack of interest or from being found too theoretical or academic.

When Paul Nitze returned to the States briefly in February, he carried with him some notes drawn up by George Ball listing a number of possible candidates for the economic post. Among these names was that of Galbraith of whom Ball wrote, "If you decide to tackle Ken Galbraith (who is now on the editorial staff of *Fortune*), you might mention my name as I know him quite well. Galbraith is an extremely energetic fellow of first rate intellectual capacity and a good deal of experience in running large research projects. He would, I think, do a very good job."⁴⁷ Taking his lead from Ball, Nitze met with Galbraith, convinced him to take the job, and arranged for him to join the Survey in London.

No sooner did he arrive in April than Galbraith made his presence known. At his first staff conference he put his finger on one aspect of the Survey's approach—its fascination with statistical data—that he felt was unrealistic. The Survey, he insisted, should not allow itself to fall into the error of overemphasizing statistical data to the neglect of the sound judgment that in many cases would have to be exercised on the basis of evidence falling far short of detailed facts and figures. In this respect, Galbraith's views fell in line with those of Nitze

and Alexander to the effect that if the job were ever to be completed, some sacrifices of exactness would have to be accepted. Although the search for German records of all sorts continued, from April on the emphasis was on finding analytical reports like those of Wagenfuehr and Passauer and on interrogating as many high-ranking government officials as possible.

Another reason for seeking out the testimony of German officials was the growing realization at AAF Headquarters that the most impressive evidence they could present to the public was in the form of authoritative testimonials from Germany's former leaders. A blunt statement by Speer or Goering to the effect that "strategic bombing had done thus and so" was found to be far more persuasive than even photographs of gutted factories. So far as the Survey itself was concerned, such statements could be checked against other evidence and, in any event, could not be ignored.⁴⁸

A third important development occurred early in May when the long-moribund Military Analysis Division was injected with new life in the form of Major General Orvil A. Anderson,⁴⁹ formerly General Doolittle's Deputy Commander for Operations at Eighth Air Force, and a number of other officers whose services were no longer required at Eighth and USSTAF Headquarters. Anderson's assignment had been arranged by General Spaatz at D'Olier's specific request. The chairman had met Anderson at Eighth Air Force Headquarters soon after his arrival in the theater and had been very much impressed with Anderson's ability to explain the tactical intricacies of planning and controlling bomber operations. As General Sorenson had come, through the force of circumstances, to be wholly involved in directing the large Services Division, a senior military advisor, largely free from administrative duties, was still needed; both by background and temperament—a gregarious man, fond of debate and justly proud of his persuasive skills—Orvil Anderson seemed in every respect the right man for the job. If it were true that he had been closely involved in making decisions that were now to be evaluated, it was also true that the directors needed a man of his qualifications and felt no fear that they would lose ultimate control over the Survey's findings. In fact, the idea of having on board a "resident apologist" could only have appealed to their sense of fairness; they were learning that with bombing policy as with everything else, there were usually two or more sides to every question.

In addition to becoming director of the Military Analysis Division,

Anderson chaired the Board of Military Advisors, a group of senior Army and Navy officers whose establishment had been promised from the beginning as part of General Arnold's effort to get his colleagues on the JCS to go along with the idea of the Survey. The board was largely a figurehead organization, its members participating only infrequently and, with the exception of Anderson, contributing little to the deliberations of the directors.⁵⁰

While undertaking to write a series of advisory reports for the directors on such matters as weather factors and bombing accuracy, the main work of the Military Analysis Division became the task of explaining to the civilian members the operational limitations that had affected the employment of bomber forces. For example, on uncovering evidence of particular success on a mission against some target, the civilian members frequently expressed dismay that it had taken so long to decide to hit the given target or that the target had not been hit again quickly to capitalize on the initial success. While there was certainly not *always* a logical reason available, there often was: the target had been under cloud cover for an extended period after the first raid, the estimation of results on the first raid, based on aerial photography, had been in error, etc.

There were also some inherent prejudices to be overcome if possible. Some of the civilians, particularly among those who had worked with the War Production Board or Foreign Economic Administration, gave the impression that they felt the war should have been won much sooner. "We organized industry, we put the women to work, we obtained scarce materials for war production from every corner of the earth. The path to victory was assured by 1942 or early 1943 at the latest. The air forces received priority in both men and material. Surely effective results should have come at a faster pace." Statements like these, whether meant teasingly or not, met a frosty reception from those who had flown over Germany themselves and who had lost innumerable friends, often before their very eyes. Coming as they did now, when career officers could see that the next "war" would be fought over who won the last one, they had to be answered at the source.⁵¹

A growing fear among some airmen that the full contribution of the strategic air forces might not be recognized by the Survey led General Spaatz's director of Intelligence to promote the compilation of the so-called Coffin Report, "The Contribution of Air Power to the Defeat of Germany." Prepared under the direction of Lieutenant

Colonel Caleb Coffin, this report emphasized the long battle to obtain air supremacy over Germany and the large proportion of the air effort devoted to tactical or ground support operations.⁵² The Survey's approach, stressing the results of a post-mortem review to the detriment of telling the operational story, was becoming increasingly a matter of concern among air leaders. While many of them had started out favoring the idea of an analytical, scientific, and disinterested presentation of results (this would help them in doing their job), some now began to fear that concentrating on results alone, without going into detail on how the results had been achieved and at what cost, would lead the Survey into telling only part of the story (this would hurt them in postwar budget struggles and in predictable future negotiations over roles and missions). Little did they seem to realize in May of 1945 that the war over who won the war was already well underway and that its outcome would largely be decided by a weapon of which they were to know nothing for another three months.⁵³

As the Field Teams moved from target to target on the continent, the hub of the Survey's activities remained at 20 Grosvenor Square in Mayfair, a section of London virtually under American "occupation" for most of the war. Situated in a seven-story residential building divided into apartments and flats, the headquarters itself provided office space for only the chairman's staff and a few of the more prominent directors. D'Olier's large office doubled as a conference room and Alexander had a smaller office adjoining. Close by was another large office shared by Judge Cabot, Colonel Perera, and Colonel Ames. (Surely some resident wag must at least have considered hanging a sign outside that office reading, "USSBS, Boston District Office.") Soon after V-E Day, however, it was decided to establish a "forward" headquarters closer to the scene of action.

The place chosen, once again discovered by Lieutenant Colonel Strickland of the Services Division, was the Park Hotel at Bad Nauheim, some twenty miles from Frankfurt. Beginning on 19 May, it became customary for the chairman and directors to meet there each weekend to discuss progress and plan future operations. The facilities were lush, and left a lasting impression on the contemporary historian.

In addition to the hotel proper the Survey took over the Trinkanlage, a municipally operated spa adjacent to the hotel. This consisted of a patio or courtyard with a concert stage and

bandstand, a reflecting pool and gardens, surrounded by a covered colonnade, which contained the spa, fashionable shops, kiosks, restaurants, and other usual concessions. This was an ideal layout for individual and divisional offices and was used as such. . . . [The chairman and directors would come] over from London on the week-ends, hold large conferences . . . and thus keep in close touch with all phases of the operations. This weekend custom was somewhat abused by groups and individuals who made it their custom to come to Bad Nauheim to the flesh-pots, but on the whole, the frequent conferences, with their reiterated speed-up theme, were valuable. . . . An operation of this magnitude under such circumstances was not, of course, all smooth running. There were inevitable clashes of authority and inevitable jealousies and injustices. A few officers and civilians unfortunately so far forgot their duties and responsibilities as to use their position in a conquered territory for their own advantage. These few, however, were found out. . . . Bad Nauheim on the whole was a pleasant place. However, although there was very little of the debris of total war in the shape of heaps of rubble, there was plenty of it in the shape of the hundreds of mutilated Nazi soldiers, most of them mere boys, who jammed most of the hospitals and hotels and who eyed their conquerors, some curiously, some sullenly, and some with obvious hate.⁵⁴

At the end of May, Mr. D'Olier returned once again to Washington, giving as his reason a sickness in his family. Less than a week later, however, the real reason for his return became evident. The Joint Target Group, planning the air assault on the Japanese home islands, insisted on sitting down with the directors of the Survey to discuss, in the light of German experience, the selection of targets in Japan. On 6 June, following a meeting with General Arnold, D'Olier telephoned London from Washington and ordered Alexander, Nitze, Ball, and General Anderson to return to the States at once; Searls (Munitions) and Russell (Oil) were already with D'Olier.

The summoned directors departed by air on 7 June, arrived in Washington on 8 June and met with the JTG on 9 June. On 11 June they were interrogated at length by some fifty to sixty officers representing all the services, and on 12, 14, and 15 June held further meetings with the JTG. As a result of these deliberations, a report was prepared and sent to General Arnold, then visiting units in the Pacific. Then on 19 June, D'Olier, Alexander and Nitze met with General Marshall and the secretaries of war and navy. Following this

meeting, Alexander returned to London where Judge Cabot had been temporarily in charge. D'Olier, Nitze, and General Anderson, however, stayed on for a while in Washington. The results of their meetings with the JTG had brought out several important differences of opinion, and Mr. D'Olier was determined not to leave until he had done all he could to bring the thinking of the JTG in line with that of the Survey directors.⁵⁵

The directors had entered upon their discussions with the JTG with mixed feelings. They had not yet finished their work in Europe and were concerned lest anything they said at this point might have to be changed in the light of later findings. What was wanted of them now was advice on target selection, predictions and recommendations about Japanese targets based on experience in Germany. Still trying to weigh results in one area, they were not at all sure that what held good in Germany would be equally valid in Japan. All of these reservations were expressed at the outset, but the air staff leaders were adamant. Explaining the situation after his return to London, Alexander related how

all the services had a great desire that the Survey should throw everything it had into the hopper. They wanted our judgment and some even wanted us to take over the job of target selection in the Pacific. The belief was that the current situation was the most important thing.⁵⁶

But such reservations, repeated continuously during the discussions, did not prevent the directors from severely questioning the line of thinking then ascendant in Washington. With roots going back at least to early 1943, this line of thinking held that the most effective attacks that could be launched against the home islands would be massive incendiary raids against urban industrial concentrations. Early intelligence reports had concluded that the structure of Japanese cities, unlike those of Germany, was such that manufacturing was centered in downtown areas, much of it parcelled out to small home workshops. Also relevant was the assumption that building materials used by the Japanese would prove much more vulnerable to incendiary attack. To the directors, fresh from the scenes of horrible destruction in Germany, it appeared that AAF Headquarters had embarked upon and sought to continue a style of air warfare parallel to that of Air Marshal Harris's RAF Bomber Command. Appalled at such a prospect and convinced of its indecisive-

ness in Germany, they argued at length against its continuance.

Speaking out as strongly as they dared, the directors argued that the primary target in Japan should be the transportation network, primarily railways and "coastwise" shipping, both along the coasts and between the islands. This thinking reflected their tentative conclusion that the most effective bombing in Germany had been that which, in the final three months, had destroyed the Germans' ability to transfer goods between factories and the front lines. Numerous instances had been uncovered where war materials, in perfect working order, had been piled up inside and outside plants, lacking only the means to get them to the armies. Japan, by this stage of the war effectively isolated, should now, they argued, be prohibited from moving either troops or supplies within and among the home islands. By that means, regardless of production rates, Japan would be rendered unable to conduct warfare. At a lower order of priority, the directors listed oil and chemical plants, and the electrical power system—especially transformer stations.⁵⁷

Summoning back a number of their experts (Williams on Transportation, Dale and Asbury on Oil, Mitchell on Electrical Power), D'Olier and Nitze stayed on in Washington until late in July, submitting paper after paper, argument after argument. Repeatedly they stressed their joint conclusion that enemy civilian morale was not a productive target, that while morale can be adversely affected by air attack, there can be no predictable translation of morale effects into behavior effects. And behavior, not morale, was what counted.

Finally, on 18 and 19 July, D'Olier and Nitze met at length with General Spaatz, then back in Washington on his way to take command of the strategic air forces in the Pacific theater. Spaatz, whose opposition to area attacks in Europe had long been a matter of record, tended to agree with the recommendations of the Survey. So also did General Eaker, who had returned from the Mediterranean in March to become General Arnold's deputy. The end result of all these discussions was a Pyrrhic victory for the Survey. On 23 July a new target directive, one incorporating most of the Survey's recommendations, was given to General Spaatz to carry with him to his new headquarters on Guam. Too late to have any effect on operations in the Pacific, this directive nevertheless made it clear that the Survey, whether from emotional predisposition or logical analysis or a combination of both, was determined to dissociate itself from any policy aimed at smashing Japan into surrender by mass bombing of

enemy population centers.⁵⁸

By 23 July, D'Olier and Nitze had rejoined the other active directors in Europe. There they remained for another month, supervising the compilation of the chairman's final report and preparing to transfer their activities to Japan. Early in July, upon his return from a tour in the Pacific theater, General Arnold had pressed D'Olier to agree to conduct a similar autopsy of bombing results in Japan. Insisting that General MacArthur and Admiral Nimitz were sold on the idea, Arnold's persuasive powers prevailed once again, D'Olier telling Alexander on 6 July that "it looks very much, Henry, as if we will have to say yes to General Arnold." From then until early September, the Survey in Europe worked night and day finishing reports, transferring much of the writing activity to Washington and New York, and deciding who would continue on the job in Japan and who would be released from further involvement.⁵⁹

CHAPTER SIX

A CHANGE OF SCENE: FIRE, ATOMIC BOMBS, AND THE GREAT ANDERSON-NAVY WAR

A Fiendish Proposition: The Richmond *Whig* proposes to hire incendiaries to set fire to New York, Philadelphia, Boston, Chicago, Pittsburg and other principal cities of the North. It assumes that this piece of vandalism could be accomplished for a cash outlay of a million of dollars, without risk or hazard. . . . This mode of warfare, the *Whig* thinks, would be perfectly "justifiable, legitimate, and right." That the scoundrels are capable of wishing to achieve such a result we have no doubt, but there are difficulties in the way which will deter them from undertaking it. The suggestion, however, shows their desperation and foreshadows their weakness.

Weekly Times, Newburgh, N.Y.
15 April 1864

Aerial incendiaries probably caused as much death and destruction as any other weapon used in World War II.

Chemicals in Combat, a volume
of the official history of the
Chemical Warfare Service

I am eager to hear about your peregrinations in the Pacific Ocean areas, including, of course, the great Anderson-Navy war.

Edward Mead Earle to Orvil A. Anderson,
16 February 1946

The strategic air war against Japan had gotten underway on 15 June 1944 when some fifty B-29s, flying from bases in China, attacked the Imperial Iron and Steel works at Yawata. The first,

major problem associated with attacks on Japan had been that of conquering the immense distances involved. The availability of England as a base had made possible the bombing of Germany with aircraft designed and built several years before the war. It had been 1939, however, before plans were laid for the design of a Very Long Range (VLR) bomber capable of attacking targets at a range of 1,500-2,000 miles. The resulting B-29, although originally intended for use over Europe, had by late 1943 been designated the primary aircraft to be used in long-range attacks against Japan from bases in China.¹

Early in 1944, five bases were constructed in southern Bengal, some sixty miles from Calcutta; at the same time construction of forward bases near Chengtu, China, was begun. From the Chengtu bases it was possible to reach only Kyushu, southernmost of the Japanese home islands. For this reason it was soon determined that the operations out of China would only be preliminary to the main campaign—that to be launched from bases in the Mariana Islands, to be invaded in mid-summer of 1944. To conduct these operations, the JCS established the Twentieth Air Force, to be made up of the XX Bomber Command (China) and the XXI Bomber Command (Saipan, Tinian, and Guam in the Marianas). To avoid getting entangled in the MacArthur-Nimitz struggle for supremacy in the Pacific—as well as to avoid either ground or naval operational control of the bombers—General Arnold got the JCS to agree that they would take on themselves the authority for controlling the Twentieth Air Force, with Arnold acting as their “agent.”²

From the beginning, operations from the China bases proved difficult. The main problem was that of logistics, since it took ten gallons of aviation gasoline to deliver one gallon over “the Hump” from India to the Chengtu airfields. Those missions that were flown had indecisive effects and were valuable primarily for training crews and breaking in aircraft. It was not really until November 1944, from bases hurriedly constructed in the Marianas, that the campaign against Japan got underway with any regularity.³

Placed in command of XXI Bomber Command in the Marianas was Brigadier General Haywood S. “Possum” Hansell, one of the most experienced air planners and formerly the commander of a heavy bomber wing in the United Kingdom.⁴ A formulator of and true believer in the theory of high altitude daylight precision bombing, Hansell was pleased to find that his initial target directive from

the JCS listed aircraft production and repair facilities as first priority. On 24 November he sent his bombers on their first mission to Japan, the specific target being an aircraft plant in the northwest part of Tokyo.

The results of the first mission, like those of most precision attacks in the coming months, were not totally satisfactory. The main difficulties arose from a combination of crew inexperience, operating the aircraft at extreme range limits, and—worst of all—atmospheric conditions over the target areas. Cloud cover over targets was no new problem to the AAF; they had lived with it for more than two years over Germany. The problem in Japan, however, was compounded by the extreme wind velocities—up to 200 knots—encountered at 25,000-30,000 feet, the normal pre-planned bombing altitudes. Trying to fly in tight, self-defending formations in such winds proved almost impossible; worse, if the formation succeeded in reaching the target,

drift was difficult to correct and bomb runs had to be charted directly upwind or downwind. Attacking Japan's best-defended cities directly in the teeth of a 200-knot wind was unthinkable; going downwind the B-29's reached ground speeds in excess of 500 miles per hour, in which case neither bombsights nor bombardiers could function properly. Moreover, the high winds made it impossible for crews to make a second pass if the run-in failed; if a navigational error brought a plane in downwind from target it might not be able to attack at all.⁵

Early in January, impatient over the results thus far achieved, General Arnold replaced General Hansell with Major General Curtis E. LeMay, a hard-driving, battle-tested, and ruthlessly logical European veteran, whose XX Bomber Command (China) was closing down operations. Despite Hansell's close association with high level planning throughout the war, he had made the pragmatic error of not recognizing that a basic change of attitude had taken place in Washington. This change reflected a growing hope, primarily among airmen, that some way might be found to bring sufficient pressure to bear to force a Japanese surrender, if possible before the planned invasion.

The comparative centralization of Japanese industries in a few major cities, the high proportion of wooden and other inflammable building materials, the disappointing results of precision attacks,⁶

the determination to subject the Japanese nation to the maximum possible destruction (a determination encouraged to some degree by a feeling among many that the "Japs," as compared to the Germans, had less call on whatever humanitarian instincts might manage to survive in an atmosphere of total war)⁷—all these factors combined to produce a situation ripe for the introduction of a new tactical theory of employment. It was to be almost two months, nonetheless, before the new tactics were initiated in full. General LeMay's first missions followed the general pattern begun by Hansell, deviating only to conduct experiments with various types and loadings of incendiary bombs.⁸ Not until the night of 9/10 March 1945 did LeMay send out the first massive night incendiary raid.

On that mission 334 B-29s took off carrying a total bomb load of some 2,000 tons. The average load per plane was closer to six tons than the three it had normally been; this was made possible by LeMay's decision to strip the planes of their defensive weapons and ammunition and to bring the planes in over the target at altitudes varying from 4,900 to 9,200 feet. Both of these changes were severe tactical gambles, but the savings in fuel consumption and the element of surprise—coming in at low level and under cover of darkness—were thought worth the risk. The area attacked was a rectangle measuring approximately four by three miles of the most built up part of Tokyo. The results exceeded all expectations. Almost sixteen square miles of the city had been burned out, including 18 percent of the industrial area, 63 percent of the commercial area, and the heart of the residential district; 267,171 buildings were destroyed; 1,008,005 persons were rendered homeless; 83,793 people were killed; and 40,918 wounded.⁹

The Tokyo fire raid, the most devastating air attack in history, not excluding the attacks on Hiroshima and Nagasaki, became the pattern for most of the remaining operations of the XXI Bomber Command.¹⁰ By 14 August, the final mission, sixty-six cities and towns had been fire-bombed. As the Survey was to find, the effects of the attacks on the Japanese government had been profound; although the "peace movement" in the Cabinet dated back as far as July 1944, its leading spokesmen accelerated their efforts after the fire raids began. In the end it took the two atomic bombs of 6 and 9 August to break the deadlock, but there can be little question that even without the atomic bombs the Japanese government would have sued for peace prior to the home islands' being invaded.¹¹

The success, in a destructive sense, of the incendiary raids on Japan marked the ultimate demise of the prewar theory of precision bombardment, a theory characterized throughout by a tendency for the wish to become father to the thought. Once again the grim logic of war had prevailed over those who sought to find some surgically precise method for the application of force. After the war there would be much hand-wringing and remorse over the results; indeed, even within the Survey itself were many who devoutly wished that victory might have been achieved in some other way.¹² Those of us thirty years later should rejoice that men felt and continue to feel that way. But we should at the same time be wary of criticizing those who were charged with the direction of events. Those men had not our perspective; instead, they had a war to win and the sooner the better. Their political leadership had determined upon unconditional surrender and it was their task to bring that goal to fruition with the least number of *Allied* casualties. The present writer, whose memory of those days is fairly dim in many respects, remembers one thing vividly: had any Allied commander been found guilty of bringing less than the total possible force to bear on the enemy, thereby to shorten the war and "bring the boys back home," he would have been well advised not to appear unprotected on Main Street, U. S. A.¹³

Upon its redeployment to the Pacific theater, the Survey found itself with a task that resembled only on the surface its work in Europe. In the first place, the *scale* of attack (measured in terms either of tonnage dropped, missions flown, or places attacked) was considerably smaller. Compared to the almost 2,700,000 tons dropped over Europe (of which 1,360,000 were dropped within Germany's borders), the total tonnage of bombs expended in the Pacific was only 656,400, of which some 161,377 tons (24 percent) fell on the Japanese home islands. And of the total bomb tonnage dropped on Japan, less than 22 percent was directed at specific industrial (precision) targets.¹⁴ Also different was the greatly increased *rate* of attack, the majority of the effort being concentrated in the five months of March to July 1945. Another major difference was that President Truman's letter to Mr. D'Olier of 15 August 1945, formally inviting the Survey to evaluate bombing in the Pacific theater, specified that the study should include "the effects of all types of air attack." By this it was meant that the Survey would investigate the Navy's participation as well as that of the Army, and tactical as

well as strategic operations.¹⁵ A final major difference, of course, was the requirement to evaluate the effects of the atomic bombs.

To these differences—in scope, rate, and weight of attack; in weapon types used; and in the scope of the Survey's charter—were added others having to do primarily with organization and personnel. The Survey's basic approach and techniques having been covered in the preceding two chapters, it is to these differences that primary attention will be directed in the present chapter.

On the whole, the Survey's affairs "ran much more smoothly than they did in Europe."¹⁶ Three factors account more than any others for this. First, of course, was the experience gained from the European effort. What new problems arose were essentially administrative or logistical rather than conceptual. Second, the prevailing conditions in Japan were much more amenable to research than those encountered in Europe. Completely organized before landing in Japan, the men of the Survey found a reasonably intact system of local and national government in a land completely subdued and subject to the fancies of a single occupying authority. This situation contrasted markedly with the chaotic advance behind the ground forces in Europe into a land artificially divided into jealously guarded zones of occupation. A third factor making for smoother operations was the virtual elimination of the occasional civil-military conflicts among Survey members that had occurred in Europe. This factor, in turn, was adducable to three others.

First, the "bad apples," whether civilian or military, were weeded out upon return to the United States and prior to redeployment. Second, the relative number of civilian experts was reduced, the chairman seeing fit to rely more heavily on military officers (many of whom, to be sure, were by background equally capable and in uniform only for "the duration"—as it was known in those days).¹⁷ A third reason accounting for reduced friction between civilian and military members was that the latter, primarily the AAF and Navy members, found themselves too busy fighting amongst one another to bother much about the civilians.

Agreeing to Do It and Getting Organized

It was early in July, while in Washington conferring with the Joint Target Group, that Mr. D'Olier was asked by General Arnold to

conduct a similar evaluation of air warfare in the Pacific theater. Arnold's reasons for doing so are not revealed in the record, but may be presumed to have been derived from some combination of the following considerations. By the end of June the dominant feeling at AAF Headquarters was that the Japanese, because of the widespread destruction wrought by the air attacks, might well be induced to surrender before the invasion planned for November.¹⁸ Should that happen, better that the D'Olier group than the AAF itself be the ones to state that the bombing attacks, unaided by invasion forces, brought on the surrender. Early dreams of a victory through air power in Europe had been dashed, but the Japanese situation promised another opportunity. And only by capitalizing on that opportunity, it was felt, could an incontestable case be made for maintaining, after the war, a strategic bombing capability second to none. And what better case could be made for an independent Air Force than the conclusion, endorsed by a "prominent group of objective civilian experts," that the AAF had "won the war"? (To "induce surrender" is hardly the same as to "win the war," but the difference was not likely to be spelled out all that clearly in newspaper reports.)

Also relevant was Arnold's knowledge of developments relating to the atomic bomb. This awareness undoubtedly fueled the feeling cited above and at the same time made it clear at the most impartial level of thinking that a special study of bomb damage effects would be carried out by some agency or other. Better the D'Olier group, specially augmented, than some unknown quantity. Also pertinent, perhaps, was a feeling that the Survey's disinclination to go along with the policy of incendiary attacks on cities might be alleviated if they were to see for themselves the effects of those attacks. And finally, of course, there was the question of balance. Since the AAF had instigated the Survey in the first place, it might seem strange to some interested parties (Congress, newspapermen, members of the other armed services) if the D'Olier group were not invited to complete the task already begun.

Whatever his reasons may have been, General Arnold had to use his most persuasive powers to convince D'Olier to continue. It was only after meeting three times with D'Olier—and after some insistent name-dropping to the effect that General MacArthur and Admiral Nimitz agreed with Arnold that the D'Olier mission was a vital service to the nation—that Arnold succeeded in convincing

him.¹⁹ As for Henry Alexander, he had originally agreed in October 1944 to serve only in a temporary capacity, for some sixty days, to see the project through its initial organizational phase. Subsequently D'Olier and Lovett had prevailed upon him to stay on, and so he remained actively involved throughout the European phase of operations, becoming in time the dominant single personality and the author of the chairman's final report. Alexander could not, however, be convinced to continue in a similar capacity in Japan.

D'Olier first put the question to him during a transatlantic telephone conversation on 4 July 1945. After some verbal sparring on Alexander's part, an exchange wherein Alexander made it clear that he could participate only on a "very part time basis" and no farther from New York than Washington, D'Olier dropped the subject. Two days later, D'Olier called again. Excerpts from that conversation make clear the tempered enthusiasm of both of them for continuing with the job.

D. Well it looks very much, Henry, as if we will have to say yes to General Arnold. . . . We are telling him that while in our present situation we are about eighty percent military, in this Japan situation we believe at least ninety-five percent will have to be military.

And later in the conversation:

A. Well, I think, Mr. D'Olier, that a relatively small group of civilians, using a large number of many of the young, able officers that we have in our crowd could probably handle the job.

D. Exactly. That is the way it will work out.

A. We have some very good young officers here from among whom we could build up quite a staff, and then supplement that with some new people.

D. I agree with that. . . . What do you think about my trying to interest General Cabell?

A. He is very fine.

D. If we could get him, don't you think he would be a very good executive officer?

A. Yes, I should think so.

D. In other words, if we could get him, we really could make him the business manager or executive vice president and really do this job for you and me.

A. I should think so, yes.

D. I will try to get him.

A. Right. I think he would be fine.²⁰

Late in July, D'Olier returned to London from Washington. There he received Alexander's definite refusal to continue in any but an advisory role, the vice-chairman insisting that his duties at J. P. Morgan and Company could be neglected no longer. The problem of a replacement was solved by the elevation of Paul Nitze to the position of vice-chairman, a position he had come to share with Alexander in fact if not in name.²¹ While D'Olier and Alexander concentrated on winding up the work in Europe, Nitze concentrated on planning for redeployment to the Pacific.

As General Sorenson had been selected for an assignment to AAF Headquarters, it became necessary to find another senior military executive. When General C. P. Cabell once again insisted that his involvement in planning the air war disqualified him from duty with the Survey, Mr. D'Olier turned to Brigadier General Grandison Gardner, formerly commander of the AAF Proving Ground at Eglin Field, Florida, and now scheduled to head an AAF Evaluation Board for the Pacific Theater.²² Gardner's orders were changed and late in July he went to Europe with D'Olier. After several weeks there Gardner led an advance party that departed London by air, flying east to Guam where they arrived on 20 August.

D'Olier and his principal assistants arrived back in Washington on 23 August. The Japanese surrender had come sooner than expected, and pressures were mounting to redeploy the Survey as quickly as possible. A Spearhead Team of twenty-two research experts, ten photographers, and ten microfilm operators left London for Washington on 16 August. Rushed across country, they were met at San Francisco by B-29s which flew them to Guam where they arrived on 1 September, joining General Gardner's party. The group on Guam began at once to recruit officers (mostly from the Sixty-fourth Engineers), and on 4 September General Gardner led a

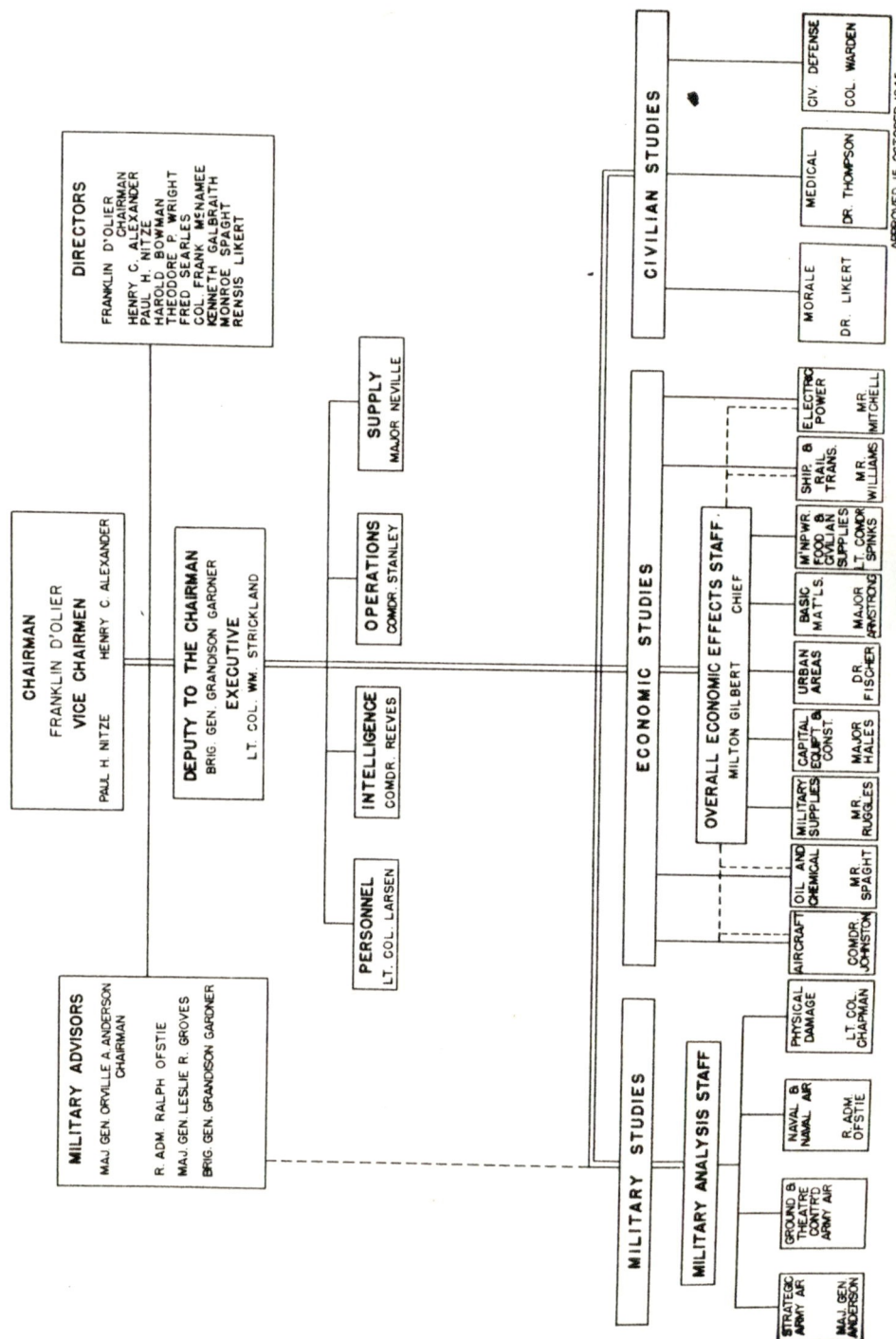
small advance party to Tokyo to secure living and working quarters and generally to coordinate activities with the occupation authorities. While all this movement was going on, Paul Nitze joined D'Olier in Washington to complete the organizational phase for the Japanese venture.

Figure 3 on the following page shows the completed organization of functions for the Survey's work in Japan. Note that the directors are tied less closely to the various Divisions than they were in Europe. This reflects not only a reduced level of direct involvement by them in the investigation phase, but also the decision to expand the number of Divisions while keeping the number of directors at a manageable level.²³ Also, a number of men had distinguished themselves in Europe as Division or Branch chiefs, and it was not thought necessary to ride herd on their daily activities.²⁴ General Gardner's position as deputy to the chairman reflected a higher status than that enjoyed by General Sorenson in Europe. With Lieutenant Colonel Strickland assisting him and effectively in charge of the Services Division, Gardner was able to act in effect as the executive vice-president whom D'Olier desired.

The basic arrangement into Military, Economic, and Civilian studies remained unchanged except for an increased diversification of functions. Major General Anderson continued in charge of the Military Analysis Division and as chairman of a reconstituted Board of Military Advisors.²⁵ Appointed by Secretary of the Navy Forrestal to represent the Navy was Rear Admiral Ralph A. Ofstie, a naval aviator of wide experience including a tour before the war as assistant naval attaché in Tokyo.²⁶ Rounding out the Military Studies group was the Physical Damage Division, headed by Lieutenant Colonel Charles R. Chapman who had been chief of that Division's Analysis Branch in Europe. Replacing him as Chief of Analysis was Professor Leroy A. Brothers who had at one time been considered along with Harry Bowman for the top job in Europe. Unlike its fate in Europe, the Physical Damage Division in Japan enjoyed high priority by virtue of its responsibility for evaluating the effects of the two atomic bombs and the incendiary raids.²⁷

Economic Studies expanded from seven to ten Divisions. This reflected less a further escalation of the emphasis on the economic effects of bombing than it did an attempt to define more precisely the specific inputs to the economic study. The Aircraft Division remained under Commander Johnston. Mr. Russell having returned

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to the Standard Oil Development Company, he was replaced by Monroe E. Spaght, chief of Research and Development for the Shell Oil Company of San Francisco. Spaght had become familiar with Survey operations in Europe while a member of the Navy's Technical Mission in Europe (NAVTECMISEU) earlier in 1945.²⁸ With the exception of Mr. Horace Dale, the Oil and Chemical Division in Japan was an entirely new team, made up of technical consultants from seventeen different corporations.

The new Military Supplies Division paralleled the Munitions Division in Europe. In charge of operations was Mr. Richard Ruggles, an economist who had served with the Survey in Europe after being recruited from the Economic Warfare Division of the U. S. Embassy in London.²⁹ The new Capital Equipment and Construction Division, investigating machine tools, electrical equipment, and the construction materials industry, was placed under Major George J. Hales. An Ordnance officer who had served with the Equipment Division in Europe, Hales in civilian life was an electrical engineer with the Cleveland Electric Illuminating Company.

In Europe the Area Studies Division had been classed among the Civilian Studies, and its purpose had been to evaluate the effects of RAF area attacks on various cities, attacks avowedly aimed at breaking the morale of workers. In Japan the renamed Urban Areas Division was placed under Economic Studies since its primary purpose was to evaluate the effects of air attack on the urban *economy*, morale considerations being left entirely to the Morale Division. Appointed chief of the Division was Mr. Jack W. Lydman who had served with the Military Intelligence Service (MIS) in New York prior to becoming a Target Specialist for the Twentieth Air Force on Guam.

The Basic Materials Division concerned itself with the effects of air attack on the supply of iron, steel, nonferrous metals, coal, coke, and salt. In charge was Major W. Park Armstrong, Jr., also formerly with MIS and bringing with him thirteen years of experience in civilian life as an industrial analyst. The Manpower, Food, and Civilian Supplies Division was under Lieutenant Commander (USNR) Charles N. Spinks, formerly with the Office of Naval Intelligence in Washington. Spinks had lived in Japan for a number of years before the war, teaching at the Tokyo University of Commerce and editing, until May of 1941, the magazine *Japan News Week*.

The Transportation Division, redesignated as the Shipping and

Rail Transport Division, was placed under Mr. Albert C. Ingersoll, Jr., a shipping expert who had led a team in Europe. Mr. Ernest Williams, chief of the Division in Europe and the man who had struggled so hard along with Paul Nitze to convince the JTG to give transportation the highest priority in Japan, remained active in Washington on a consultant basis. The Electric Power Division was the old Utilities Division somewhat reorganized and headed by Mr. W. E. Mitchell, chief of the Division in Europe and president of the Georgia Power Company.

From his position as a director, J. Kenneth Galbraith remained technically in charge of Economic Studies as a whole. However, many of the functions of the old Overall Economic Effects Division were distributed among the other Divisions, and Galbraith appointed Dr. Milton Gilbert to oversee the reduced Overall Economic Effects *Staff*. Gilbert, chief of the National Income Unit of the Department of Commerce, was lent to the War Department for this purpose and was ably assisted by Paul A. Baran (discharged and now a civilian).

The main change in the Civilian Studies grouping was the divorce of the Medical Branch from the Morale Division and its establishment as a separate Division. Appointed to head the new division was Brigadier General (USPHS) Lewis R. Thompson, assistant surgeon general of the U. S. Public Health Service. Dr. Thompson staffed his Division largely with personnel from the Public Health Service and concentrated its efforts on examining the medical effects of the atomic bombs and the general effect of bombing on medical services in Japan.³⁰ Because of his high rank, Mr. D'Olier appointed Dr. Thompson to the title of a director of the Survey.³¹

The Civilian Defense Division remained technically the responsibility of Colonel McNamee who spent most of his time in Washington representing Mr. D'Olier. In active charge of the Division in Japan was Colonel John B. Warden who had been with the Survey in Europe.

Although Rensis Likert was unable to accompany the Survey to Japan, he rounded up an impressive band of sociologists to man the Morale Division under Mr. Burton R. Fisher, a former colleague of Likert's in the Bureau of Program Surveys, Department of Agriculture. Benefiting from the European experience, the Morale Division's efforts were more precise than in Europe, but their definition of morale was such as to make their findings of little more than academic interest.³²

On the Job

When General Gardner and Admiral Ofstie led the advance party from Guam to Tokyo on 4 September, their main purposes were to make the Survey known to the occupation authorities and to scout around for working and billeting space. Permission was arranged during their visit to General MacArthur's headquarters for the Survey to locate its own headquarters in the Meiji Seimei building in the Marunouchi section of Tokyo, overlooking the grounds of the Imperial Palace.³³ Billeting space was found at the Imperial Hotel (for those of the highest rank), the Tokyo University Club, and two former office buildings in the city. These proved insufficient and some one hundred men had to be put up on the USS *Ancon*, a Navy communications ship anchored in the harbor.

Redeployment and recruitment of new personnel proceeded rapidly. By 26 September when Paul Nitze departed Guam for Japan, the rosters in Tokyo already totalled some 485 men on the scene or en route. Following the European pattern, a series of four regional Headquarters was established; Hiroshima and Nagasaki were "natural" choices to which were added Osaka—the second city of Japan, over 1,600 years old and at one time (300 A.D.) capital of Japan—and Nagoya, the latter by virtue of its having become the main center for aircraft manufacture. Establishment and control of the Regional Headquarters were centered in G-3 of the Services Division.

Outside of Tokyo working conditions were essentially primitive, research teams frequently putting up in any building they could find and working, as often as not, in unheated buildings by the light from kerosene lamps. At Hiroshima and Nagasaki the teams were billeted offshore on APDs (two stack destroyers converted to destroyer transports), there being no other available facilities.

Conditions of work at Hiroshima were undoubtedly the worst in the Survey. Teams could sleep only on the APDs, so that they had to ride five miles in a landing craft, clamber out on to the docks, and then drive about forty miles to work, reversing the process in the evening. . . . the reason for the ships staying at Hirowan when good anchorage was available quite close to

Hiroshima was that the Inland Sea had not been cleared of mines laid by our 20th Air Force.³⁴

Daily staff conferences began in Tokyo with the arrival of Paul Nitze on 27 September, and continued through 21 December. Nitze chaired these meetings until the arrival on 24 October of Mr. D'Olier. (With the departure of D'Olier and Nitze for the U. S. on 4 December, General Gardner took charge.) The essence of Nitze's executive style was a hard-driving, aggressive, and confident approach to the problem at hand; and the problem, as defined by D'Olier, was to get the job done thoroughly and at the same time quickly. From the beginning, 3 December was set as the target date for completion; for most participants this meant that they would have a maximum of six to seven weeks to complete their research. For this reason the emphasis was almost exclusively on data gathering with considerably less importance attached to report writing, a task that could be completed just as well back in Washington.

As he had in Europe, Mr. D'Olier relied heavily on his vice-chairman, in this case Nitze, to oversee field operations and establish controls over the data input and report compilation. Nitze in turn looked to General Gardner on all purely administrative and logistical matters. Since the Survey's revised charter from the President required an evaluation of all types of air attack in the war against Japan, the chairman decided that he should visit some of the many places outside Japan where special teams of the Military and Naval Analysis Divisions were conducting studies.

Late on the evening of 19 November, accompanied by six others,³⁵ D'Olier left Japan on a whirlwind tour similar to that which he had taken to France and Italy one year earlier. Flying in the B-17 that had accompanied General Anderson from Europe, they visited Shanghai,³⁶ Manila, Leyte, Morotai, Biak, Hollandia, Rabaul, Bougainville, and Guadalcanal (where the fare for Thanksgiving dinner represented an improvement over the coffee and doughnuts near Rome the preceding year). Starting back, the party flew via the Admiralty Islands to Guam, passing over Truk en route; from Guam they returned to Tokyo, passing over Iwo Jima.³⁷ On this trip they managed to view, at least from the air, most of the area in which the Island Study Group, under Brigadier General (USMC) Lewis G. Merritt, had been conducting evaluations.³⁸

The Survey's methodology in Japan differed markedly in one

respect from what had been the experience in Europe; this was in the reliance that *had* to be placed on the results of interviews and questionnaires in the absence of industrial production data. Of the sixty-six cities attacked in Japan, only six had been struck before the last three months of the war. The rate and intensity of the fully developed air attack had been so great that the Japanese, except in the aircraft industry, had made little effort to rebuild or disperse damaged factories, thereby to resume production. When a plant was destroyed, therefore, it was simply abandoned; and if any production records survived an attack (something less likely where fire was the primary damage inducer), there was little reason for the Japanese to keep them. In general, the fatalistic attitude of the Japanese towards the destruction wrought by air attack, when coupled with their lesser degree of industrial control and rationalization, created a positive dearth of official records.³⁹

To support the need for widespread reliance on interviews, a Language Section was established within G-2 of the Services Division. Placed in charge was Lieutenant Commander (USNR) William P. Woodard, who had spent twenty years in Japan as a missionary for the Congregational Church, assisted by Lieutenant Commander (USNR) Edwin Buchanan, who had spent most of his life in Japan. In addition to American-born Japanese (Nisei), a number of Hawaiians, several graduates of the Navy Language School at the University of Colorado, and a number of "old Japan hands,"⁴⁰ Commander Woodard recruited a number of important Japanese civilians to assist in the work.⁴¹ Transcripts of the important interrogations were reproduced and circulated to the various divisions. By cross-checking the accounts of various witnesses a degree of reliability was assured, but the exceptionally cooperative attitude of most interviewees remained a source of continuing concern.⁴²

The Japanese attitude of deference toward their conquerors is revealed in an episode recorded by Major Beveridge. While leading a Field Team of the Manpower, Food, and Civilian Supplies Division, Commander Spinks became involved in a rural revolution in the village of Orihara. The team had gone to the village to observe a farmers' meeting. During a heated discussion of rationing and food distribution, verbal attacks were made on the village headman who was accused of being a puppet of the military caste and of having used the rationing system for political pressure purposes. (The mayor, by the way, owned the local rice mill.) Leading the agitation were two

men just released from prison where they had been incarcerated on charges of communist activity.

After feasting the Survey team at a banquet, the agitators invited the team to another meeting. The mayor had been caught hiding out in his rice mill and was being roundly denounced before the meeting. The farmers, who seemed to feel that the presence of the Americans lent them moral support, looked to Commander Spinks and his party for approval as they built their case against the mayor; at some point in the proceedings, they appeared to assume, the Americans would declare for the challengers and dismiss the mayor. Spinks finally had to address the gathering to make it clear that he and his group were only spectators, "and were not sponsoring a peasants' rebellion, however much it might appear to be an approach to democracy."⁴³

By the second week of November the Survey was operating at its peak strength in the Pacific theater. Altogether some 1,000-1,100 people were actively involved, either in research teams, in administrative or support capacities, or in the interrogation phase. As early drafts of various reports began to come in, Nitze established a Secretariat under the direction of Lieutenant Commander Walter Wilds. Wilds, with help from Commander Reeve, established routing procedures so that report drafts might be coordinated with all interested parties. Final clearance and approval of the drafts, however, was the function of a four-man group made up of Paul Nitze, General Anderson, Admiral Ofstie, and General Gardner. In the words of the contemporary historian, "No report was considered final until it had received the signature of the 'Big Four'."⁴⁴ As it happened, however, agreement between two of these four was the exception rather than the rule, and it is to this very human, very understandable, but nonetheless regrettable tale that we must now turn.

The Great Anderson-Navy War

One result of the Survey's work in the Pacific was the emergence of a bitter, internecine squabble between two of its Divisions. This squabble—any other word would add dignity where it doesn't belong—began in the summer of 1945 and continued through the summer of 1947. Among its effects were the publication of certain USSBS reports, one in particular, whose true origins have been

called in question by later writers and, indeed, slandered by some. The remainder of this chapter, aimed at setting the record straight once and for all, will treat the dissension that arose between the Military Analysis Division and the Naval Analysis Division. It will conclude with a bibliographical note tracing the cavalier manner in which certain writers have presumed to instruct the public on the origins of USSBS Pacific Report #71a, *Air Campaigns of the Pacific War*, a report whose uniqueness is attributable to its bias rather than its legitimacy.

"The great Anderson-Navy war," as Edward Mead Earle once facetiously referred to it in a letter to Major General Orvil Anderson, was but one minor skirmish in a much greater war, in this case the war of words over the inevitable question of who—which service or branch thereof—won the war. As already shown, the war over who won the war had gotten underway in 1943, intensified during 1944, and by the summer of 1945 had become a matter of more pressing interest than any other single factor of concern to those planning the future of the various services. All such planning had to take into account a growing awareness that the military services might somehow be administratively "unified" in the near future. The Strategic Bombing Survey, given its charter, could not avoid becoming involved in the debate over so-called unification of the armed services, a debate in which the record of the late war could be presumed to weigh heavily.

Any basic change leading to what came to be called unification could not be brought about without seriously affecting vested interests (whether of power, place, prestige, status, or habit) in the War and Navy Departments. A more important consideration for the conservatives, however, was what would happen to the enormous Air Forces that had been created. If they were to receive equality with the Army and Navy, which of the three would achieve dominance? And how would Air Forces be defined? Would semantics win out, for instance, and the Air Forces come to include *all* flying vehicles, including the Navy's air arm? For the carrier admirals, victors at long last over the battleship admirals and now warding off the advances in status of the submarine admirals, this was a life or death question. And what of the Navy's Marines? Would the semantics of "land, sea, and air" lead to the dismemberment or transfer to the Army of the nation's "oldest service"?

For the senior officers most concerned over these issues and their

potential ramifications, one point seemed clear: the record of World War II would go a long way towards determining which service (or services) would achieve dominance in the postwar period. If one service could convince the American public that victory was owing primarily to its efforts, then it might safely be assumed that Congress, when considering any reorganization scheme, would take that circumstance into account. And to be sure, even excluding any such calculations from the balance, each service owed its fallen members a solemn debt: at a minimum their contributions to total victory, whether or not in themselves decisive, should find their place in the (sometimes fleeting) immortality provided by the historical record. So reasons aplenty existed for those in a position to do so to do everything in their power to assure that the contributions of their own service were not slighted in the final reckoning.

Another factor was crucially relevant to these issues. The senior commanders during the war had most of them matured in their services during the late twenties and thirties, in the era of isolationism, reaction from World War I, the Great Depression, and miniscule budgets. At West Point (and even at Annapolis) they had become familiar with Emory Upton's thesis that it was "the American Way" all but completely to dissolve the armed forces after a successful war, and thereafter, with the emergence of a new threat, to scurry about frantically trying to recreate a viable military posture. These senior commanders had been majors and colonels, many of them, in 1939, 1940, and 1941; with their own eyes they had seen and with the sweat of their own labors they had carried out the normal switchover into the frenzy of rearmament. That the American reaction at the moment of victory would be any different from what they had been taught to expect, they had no reason, based either on the historical record or their own experience, to hope.

At precisely this stage of developments, mankind presented itself with The Bomb. Fearing the worst, as it is their responsibility to do, military leaders were quick to form in their minds an image of how the next war would begin—with an atomic blitz, in the Pearl Harbor style, yet next time with Washington as the target. The combination of the long-range bomber and the atomic bomb, any fool could see, clearly ruled out the old pendulum system of disarmament after victory and rearmament for war. The next war, many felt, might be decided in a few hours. Any responsible senior commander entertaining anything even approaching such a viewpoint, then, had a

definite and clear-cut responsibility to the nation to do all in his power to assure the maintenance, after victory, of a defense establishment eclipsing in mobility and striking power anything hitherto known to America in peacetime.

In this context, what could reasonably be expected from battle-scarred senior admirals other than that they would fight for the continued provision of powerful naval striking forces? What could be expected of Air Force generals other than that they should stress continually the need to maintain an atomic striking force? For a general to support navies and an admiral to argue for a long-range, land-based strategic bombing force would have been contrary to all the rules of human nature; *more important*, for either to have done so would have been to put himself in the position of offering an amateur, unprofessional argument. Any Congressional committee would have been quick to remind the general, for example, that they would prefer to hear about naval forces from someone competent to treat the matter. Hence a decision to commit oneself to the struggle for maintaining armed forces second to none placed a man inevitably in the position of arguing the case for his own service.

Yet this intricate complex of hopes, fears, ideals, and resolves was by late 1945 further complicated by the appearance, on the speculative horizon of the future, of a *specific* potential enemy, a novelty in twentieth-century defense considerations. Not only was this potential adversary specific, he was secretive, suspicious, mysterious. The apparent Russian determination to conquer all of eastern Europe was soon interpreted by many to represent only the first step on the way to "communizing" all of Europe. Indeed, even among some of the airmen who had hoped for victory in Europe without the need for an invasion, a feeling arose that it was perhaps just as well that we did position troops on the continent; had we not done so, some felt, it might well have been the Russians who drove the Germans from Normandy.⁴⁵

Undoubtedly, the senior commanders who worried themselves over these matters—especially about the probability of wholesale disarmament on the part of the United States—went overboard to a degree. The American public, after all, was not blind to the implications of the atomic bomb. But by the same token, military leaders were instantly faced with enormous pressures to get the boys back home. Every day, every commander received letters from wives, mothers, maiden aunts, and former employers: "When is my Johnny

coming home? His son is three years old and he's *never seen him!*" Even within the ranks the pressures mounted. Men who had "done their bit" were less than sympathetic about the long-range fears of the higher authorities and the administrative complexities implied by massive demobilization. There were wives who had stopped writing, parents who were not getting any younger, and those 4-F bastards who had stolen all the good jobs—and not a few wives and sweethearts. Responding to the public clamor, Congressmen complained bitterly about the damned militarists who seemed unwilling to give up their private armies.

Whether this welter of confusion in late 1945 might have been alleviated by a war policy that had looked somewhat beyond the simplistic goal of "unconditional surrender" will be long debated among historians. For the purposes of this essay, however, that question is irrelevant. The confusions, the fears, and the hopes existed; so also did the bomb and the enigmatic Russians; so also, for responsible senior officers, did the moral burden of providing for the future. (Irrelevant here are any reflections on "who started the Cold War." What is being portrayed is the situation as seen by many, perhaps most, senior American officers; whether they pictured Russian intentions correctly or not is quite beside the point.) It is in this context, then, that one must view the inter-service wrangling about how victory had been achieved and, hence, how the nation should prepare for future eventualities.

Admiral Ofstie's assignment to represent the Navy on the Strategic Bombing Survey could not be undertaken lightly. In addition to providing technical advice, he had to assure as best he could that the Navy's interests were well served. From the beginning of the war an informal agreement at the highest levels had awarded to the Army primary responsibility for the European theater. This accorded with the assumption that a great land battle would necessarily precede victory over Hitler. Similarly, the war in the Pacific was generally conceded to be the province primarily of the Navy. Not only was the embarrassment of Pearl Harbor to be overcome, but the extent of Japanese conquest and the enormous over-water distances involved ruled out any other decision.

From the Navy point of view, however, the War Department had not very well lived up to the bargain. Just to put the Army on the continent of Europe had involved a huge expenditure of Navy effort, assisting the Royal Navy in winning the Battle of the Atlantic and

then in transporting the Army and its equipment. Then there had been General MacArthur and the inability of the Navy to establish under Admiral Nimitz true unified command in the Pacific parallel to Eisenhower's in Europe. And finally, with ultimate victory in sight, their theater had been invaded by those bumptious, uncultured airmen with their big bombers. Establishing themselves on bases captured and established by Navy-directed assault forces, the Army's airmen, with much attendant publicity, had then struck at Japan with such force as to induce surrender.

Worse, the airmen seemed to imply, both in private conversation and public announcements, that much of the Navy effort in the Central Pacific drive had been unnecessary. The airmen did this less by assertion than by careful omission coupled with a tendency to damn with faint praise. But even worse *yet* were the new semantics. Rather than speak of *Army Air Forces*, or even *air forces*, some of the leading airmen had lapsed into such dangerous barbarisms as "the air effort" and "air power," thereby conveniently clouding the essential differences between land-based Army aircraft and carrier-borne naval aviation. Presuming that the airmen would win their battle for independence from the Army, Navy leaders became increasingly suspicious that the real aim of the airmen was not only independence but control over *all* forms of air effort or air power. And for the Navy that was an unthinkable prospect, a view they could support not only from their own recent experience but also from the results of its having been tried unsuccessfully by Great Britain after World War I. Thus the Navy—in this instance in the person of Admiral Ofstie—was on the defensive; if they weren't careful, if they didn't speak out, they might well lose their shirts and yardarms in less time than it took to defeat Japan.

Admiral Ofstie's basic strategy, therefore, was to emphasize the Navy's role in making it possible for the AAF to come within striking range of Japan. This strategy, as well as his awareness of the stakes involved, is revealed in a memorandum he addressed on 16 September 1945 to "Navy and Marine Corps Members of the Naval Analysis Division." After explaining what the Survey was and that its primary task was to evaluate all forms of air attack in the war against Japan, he continued:

The assigned mission, however, requires a parallel and equally thorough study of all prior operations which brought us within

striking range of the Japanese homeland, and without which there would have been no successful conclusion of the war. . . . The result of the Survey's effort . . . may well be the basis for the major decisions respecting our post-war national security. This may include the form of our military-naval organization, the relative "weight" of our respective armed forces—ground, sea, and air—and the means of integrating all forces to the end of national preparedness. This imposes a grave responsibility on all personnel selected for the job. It will require of every man his utmost initiative, skill, and effort.⁴⁶

As should be clear, the first sentence quoted above represented an expansion—at least in a literal sense—of the Survey's charter. The "thorough study of all prior operations" would involve rather a great deal more than an evaluation of "all types of air attack." When General Anderson voiced objections to Ofstie's approach, it was pointed out to him: (1) that air elements of one type or another had been involved in every Pacific operation; (2) that it would therefore be necessary *within the charter* to study all operations; (3) that to study air attack in isolation from other factors affecting the course of those operations could hardly result in any but a distorted image of what had actually happened; and (4) that besides, the Navy needed certain types of data of questionable value to the Survey but which might as well be gathered at the same time. In short, General Anderson was told, in effect, "You are certainly going to tell your story. Let us tell ours, and let the chairman and directors decide between the merits of the two."

The battle lines having been drawn, the two Divisions—Military Analysis and Naval Analysis—went their separate ways insofar as determining what campaigns and operations each would cover. It was agreed that each Division would be given the opportunity to comment on the reports of the other before any report reached the chairman's level. Then began the war of words, of which two examples, one from each side.

When Admiral Ofstie received the draft of the Military Analysis Division's report, *The Fifth Air Force in the War Against Japan*, he prepared a three-page memorandum containing, among others, the following comments:

pp4-5: Criticism not based on fact. p5: Is this an objective report on the 5th Air Force or primarily a medium of propaganda? If the latter, as it appears to me, it has no place in an USSBS publication. p7: continuing propaganda. pp60-61: Not factual.

p64: should insert "Army and Navy" before "Air Forces."
 CVE's furnished the ground support for Lingayen landings.
 pp65-66: Implication of course is that these were *Army* aircraft.
 Fact is they were mostly naval. p68: Childish. p73: "Air transport alone can support large intra-theater operations..."
 Utter nonsense.⁴⁷

Much the same sort of reaction was induced in the Military Analysis Division when they received a draft of a report by Admiral Ofstie's people on "The Philippines Campaign:"

Comment No. 2. This sentence concluded that the defeat in the Philippines campaign would constitute the final battle. We now know that this was not true. . . . Recommend that the sentence be deleted or modified to show recognition of campaigns that followed that of the Philippines.

Comment No. 9. This entire paragraph leads to both faulty and dangerous conclusions in terms of future military organization and structure. It is recommended the paragraph be rewritten in a sense which shows a realistic appreciation of the relative combat capabilities of opposing forces at this time.

Comment No. 12. Recommend deletion of the entire paragraph. It is neither realistic nor factual.

Comment No. 32. Following "repeated strikes" add, "... by FEAF and the fast carriers of the Third Fleet..." Both these forces operated in this area and the text should so state.

Comment No. 36. Delete: "By January 1945 Japan was in fact a defeated nation." This statement is hardly true. Her capacity to wage war had been seriously weakened. Her chances for victory were now apparently past. However, she had yet to announce her unconditional surrender. She was prepared for further resistance and did resist. That resistance cost us heavily in the loss of lives. It would have been inconsistent for us to have paid such prices to a nation already defeated.⁴⁸

By the time the Survey returned to Washington in January 1946, the pent-up bitterness between General Anderson and Admiral Ofstie, and their respective staffs, had poisoned relations between the two to the point where their value to the Survey had been measurably decreased. (To conclude this discussion it is necessary to violate strict chronology at this point. The redeployment of the Survey as a whole from Tokyo to Washington will be treated in the

following chapter.) On General Anderson's part, the increasingly unhappy situation had been exacerbated by what he looked upon as some unnecessarily fuzzy language included in the chairman's *Summary Report* (USSBS Pacific Report #1, released to the public on 1 July 1946, also treated in the following chapter, along with Anderson's reactions thereto). But the straw that broke Orvil Anderson's back was the publication late in 1946 of the Naval Analysis Division Report, *The Campaigns of the Pacific War*, USSBS Pacific Report #73.

When the Military and Naval Analysis Divisions had originally set to work in Tokyo, they, like each of the other Divisions, planned to prepare a series of reports the results of which would be summarized in one volume representing, for the Division, a summary of its findings. Accordingly, Admiral Ofstie's staff set to work compiling a report tentatively entitled "The Carrier Air Effort Against Japan," while at the same time General Anderson's officers worked on their report to be called "The Over-all Air Effort Against Japan." Trouble began as soon as the first drafts of these reports were exchanged between Divisions upon their return to Washington.

Ofstie's report, in the eyes of the Military Analysis staff, was mistitled; instead of treating the part played by carrier air against the Japanese *homeland*, it was, in fact, a laudatory history of the entire carrier task force effort throughout the Pacific. Anderson's report was similarly repugnant to the Naval Analysis staff in that it tended to belittle the efforts of the fast carriers, and to lapse all too frequently into such statements as "air power dominates naval warfare." For Ofstie the intent was obvious: by failing to distinguish between land-based Army aircraft and carrier-borne naval aviation (by using terms like air power), Anderson was trying to make a case for the centralized control of all air elements, was trying to record the war in such a way that a new independent Air Force might make a case for taking away the Navy's primary offensive weapons.

The respective drafts were returned to their originators and a few meetings took place, all to no avail. Ofstie, positively repelled by Anderson's attitude, escalated the battle by retitling succeeding drafts of his report "The Air Effort Against Japan." By continuing to use the word "Japan" in its widest possible sense, by dropping the qualifying word "Carrier" from the title, and then proceeding—so far as Anderson was concerned—to tell precisely the same story with a few minor changes, Ofstie was going altogether beyond the bounds of reason. Anyone reading such a report, Anderson concluded,

would come away with the impression that the Army Air Forces had not been involved in "the air effort against Japan." Nonetheless, Ofstie forced the issue at a meeting attended by both D'Olier and Nitze. Siding with Anderson, Nitze objected to the report and wrote a letter to the Navy Department stating not only that the Survey would not publish it but that the Survey objected to its outside publication (*i.e.*, by the Navy) because of its indicated relationship with the U.S. Strategic Bombing Survey.⁴⁹

Here the matter might have ended, Nitze having indicated at the same meeting that the Military Analysis Division report was similarly unacceptable.⁵⁰ Anderson then returned to his new post as commandant of the Air War College at Maxwell Field while Ofstie left Washington to participate in Operation CROSSROADS at Bikini Atoll. Before departing, Ofstie instructed his staff to press on with renewed vigor on yet another report, already in the mill, in this case one designed to portray in explicit terms the full range of naval operations in the war against Japan. When Ofstie next returned to Washington the galley sheets had already been prepared, and once again representatives of the Military Analysis Division had "violently objected" to the report. Busy at Maxwell Field, Anderson delegated Colonel Benjamin Cain of his Division to represent him in negotiations with the chairman's office.

In a late summer meeting with Admiral Ofstie and Mr. (formerly Lieutenant Commander) Walter Wilds, Colonel Cain "agreed to the final changes."⁵¹ Following the meeting, Admiral Ofstie took the corrected galleys to the Government Printing Office,⁵² from which emerged, in November 1946, *The Campaigns of the Pacific War*, in design and format like the other USSBS reports and bearing the standard Foreword explaining the Survey's mission. The title page read: The Campaigns of the Pacific War: United States Strategic Bombing Survey (Pacific); and then in smaller print at the bottom, Naval Analysis Division.

The release of *Campaigns* was interpreted by General Anderson as opening the door to a renewed consideration of his own report on the "Over-all Air Effort in the War Against Japan." It is even conceivable that he had instructed Colonel Cain to clear *Campaigns* so as to provide such an opportunity. However that may be, Anderson acted quickly. On 26 November he had Lieutenant Colonel McMurrin resubmit his report to Mr. Nitze. In a memorandum of 24 December to Walter Wilds, Nitze made it clear that his patience was wearing thin.

1. I recommend that the accompanying report . . . be returned to Major General Anderson with a copy of this memo. 2. Last summer the Vice Chairman of the Survey wrote the Undersecretary of the Navy that the Survey did not approve the report prepared by the Naval Analysis Division entitled, "The Air Effort Against Japan." 3. In subsequent conversations the Survey informed the Navy Department that it was not the intention of the Survey to publish an overall analysis of the air effort against Japan prepared by the Military Analysis Division. 4. This statement was made to General Anderson and with his agreement. 5. As a result of this assurance the Navy Department agreed that the overall report of the Naval Analysis Division would not be published either by the Survey or by the Navy Department. They indicated, however, that the Navy Department might have prepared an entirely different report on the same subject matter which might be published by the Navy Department, but in which no support by the Survey or its findings could be inferred. 6. In view of the above the Survey does not feel it can now go back on an assurance given the Navy Department in which the Military Analysis Division concurred. 7. The War Department may wish to consider publishing an overall analysis of the air effort against Japan written by the War Department and published in such form that no support by the Survey of its findings could be inferred.⁵³

Connoisseurs of the bureaucratic style will have little difficulty interpreting the implied finality of this response, larded as it is with references to the highest authorities and injunctions about not going back on one's word. But now it was General Anderson's turn not to give up, and he quickly seized upon the inadequacies of the memorandum as they appeared to him. In the first place, Ofstie's published report was not essentially different from earlier draft reports prepared by his Division, certainly with regard to the scope of its coverage; and it *had* been published under the aegis of the Survey. Second, the report's title gave a false impression inasmuch as the report did not include a presentation of the B-29 campaign against Japan. Third, the Naval Analysis Division having been allowed to publish "its report," by what logic was the Military Analysis Division to be denied the same right?⁵⁴

While all this was going on, even Mr. D'Olier, at home in New Jersey, was becoming confused. Having noticed news-report on Admiral Ofstie's *Campaigns* report, he wrote plaintively to Colonel McMurrin.

Dear Colonel McMurrin,

I have seen several references during the past few days to the report of the Naval Analysis Division, which I suppose is Admiral Ofstie's report. I was wondering if you could conveniently send me a copy of this report.

Do you happen to know whether it had the approval of the Survey or whether it was his special report?

Sincerely,

(signed) Franklin D'Olier⁵⁵

McMurrin replied to D'Olier on 31 December, explaining the background as best he could, enclosing a copy of Nitze's memorandum, and asking the chairman whether he agreed with the vice-chairman's recommendation. D'Olier replied on 3 January 1947 that he agreed "absolutely 100 percent."⁵⁶ By this point, however, everyone's wires were crossed and a general meeting of the minds was necessary. McMurrin wrote to D'Olier again on 14 January 1947 expressing General Anderson's dismay that by some means or other an exception had been made to the Survey's announced policy in allowing the Naval Analysis Division to publish their report.⁵⁷ Hoping to put an end to acrimonious debate, D'Olier advised Nitze that he should meet once again with General Anderson.

In February, another meeting was held, after which Nitze sent General Anderson's report to Admiral Ofstie for his comments. Ofstie received the report on 3 March and was appalled at what he read. Beginning with a forceful attack on the original bases of U.S. strategy in the Pacific, Anderson's report appeared to represent special pleading at best, deliberate dissimulation at worst. For Ofstie, its conclusions, which included a carefully worded, yet very plain, justification for a theory of "preventive war,"⁵⁸ were wholly one-sided and utterly misleading. Anderson's final paragraphs summed up the report's repeated themes.

Before World War II the growth and development of airpower was restricted by concepts of surface warfare which visualized the air weapon as an ancillary force. Airpower entered the war under this handicap and by slow evolutionary steps, each based

on hindsight, emerged as the primary force. Airpower was the dominant combat force of the war against Japan and was decisive in that—

Airpower dominated its own element.

Airpower dominated naval warfare.

Airpower dominated ground warfare.

Airpower possessed powerful and independent logistical capabilities.

Airpower established effective area interdiction by occupation of the air space over an objective area.

Airpower was capable of forcing the capitulation of an enemy without surface invasion.

.....
If our nation is to survive in this atomic age, logic demands that our national defense agencies be oriented toward airpower, and, further, that the future development of airpower not be restricted, as in pre-World War II years, by the inertia of established organizations or personalities.⁵⁹

Admiral Ofstie's passionate reaction to Anderson's report can be seen in the following excerpts from his reply to Vice-Chairman Nitze:

It was suggested that this manuscript . . . would complement or serve a parallel purpose to "The Campaigns of the Pacific War," which was prepared by the Naval Analysis Division. With the latter suggestion I am in complete disaccord. Rather than being in any sense an objective study of the war, I find "Air Campaigns" to be in major part a vicious and deliberate attempt to discredit the entire Naval service. That is my summary of the manuscript, but I am appending a somewhat detailed analysis should you be interested in the basis of my conclusion. . . . In the circumstances, Mr. Nitze, I would consider the publication of the proposed volume to be directly contrary to the principles under which the Survey operated and decidedly inimicable to the best interests of the armed services and the government, either at this or any future time. . . . I cannot believe that the Directors would willingly associate their names with a paper so completely lacking in character and honesty of purpose.

And from the equally empassioned enclosure:

The volume presents a completely inaccurate and entirely biased account of our war against Japan which is of absolutely no historical value, consistently misrepresents facts, and indeed, often ignores facts and employs falsehood. From this light treatment of the Pacific war, the authors have arrived at a series of biased conclusions which, lacking any degree of factual support, not only are entirely unjustified but impose a threat to our future security. The central theme of the volume is the development of the idea that air power alone made possible our victory in the Pacific, a theme which is labored on every page. As used in this volume, the term air power apparently denotes a force which is not only irresistible but also is completely independent from any consideration of logistics requirements or design restrictions.

Underlying the main theme that air power alone won the war is a vicious and deliberate attempt to discredit the naval service. No opportunity is lost to belittle the efforts of the Navy, to charge the Navy with incompetence and to ridicule the Navy concept of warfare. . . . In asserting that air power was the predominant factor in our victory, the authors do not differentiate between Army Air Forces and Naval carrier-based aviation. They fail to consider the latter as an integral factor of sea power, indicating thereby a total lack of understanding. Thus we find that the battles of the Coral Sea and Midway are to them examples of "air battles exclusively," examples which prove that "air power dominates naval warfare." . . . This loosely-hung-together listing of the alleged handicaps inherent to carrier operations indicates colossal bigotry and complete and obvious disregard for fact. . . . Refutation in the face of the bigotry which would prompt such false considerations would appear to be of no avail. . . . I should like to indicate my complete revulsion to the similes which the authors draw to support their false statements. Throughout the volume they have belittled, ridiculed and otherwise attempted to discredit those naval leaders to whom we all owe so much, but not content, the authors would now paint them as lacking all humanitarian instincts, as accustomed and willing to launch their carrier pilots "with little probability of recovery." Wholly biased, false in great part, the volume "Air Campaigns of the Pacific War" is of no apparent value to other than self-seeking individuals. On the contrary, since it completely misrepresents the historical facts of the Pacific war, it could cause great harm to future military thinking and thus to our national security.⁶⁰

Admiral Ofstie's letter has been quoted at such length for two reasons. First, to make clear the depth of feeling involved in this controversy, lest any reader feel that the generalizations introducing

this topic are overdone. Second, Ofstie's view as to the value (if that word can be used here) of General Anderson's report, along with Ofstie's view of its purpose and intent, is a perfectly adequate expression (were it paraphrased) of the feelings of General Anderson and the Military Analysis Division about *The Campaigns of the Pacific War*. The chairman, having had these feelings expressed to him, felt the best way to end the matter quietly was to be "fair" to the Military Analysis Division and allow publication of their report under the Survey's auspices. For the record, D'Olier addressed the following memorandum to Lieutenant Colonel McMurrin on 23 May 1947:

As a result of staff conferences with Major General Lauris Norstad and Major General Orvil A. Anderson, it has been agreed that the report entitled "Air Campaigns of the Pacific War" should be printed in the clear as an official report of the United States Strategic Bombing Survey. You are hereby directed to take necessary action to print the report in the usual manner.⁶¹

Accordingly, after some further revisions undertaken at the suggestion of General Norstad at AAF Headquarters, General Anderson's report was released to the Government Printing Office late in May; it emerged in July as USSBS Pacific Report #71a, *Air Campaigns of the Pacific War*.

So ended the major setpiece battle of the great Anderson-Navy war, whose minor skirmishes will be treated in the following chapter. Regrettably, the historian must conclude that none of the participants covered himself in glory, but then men rarely do when they are evenly matched, when the stakes are so high, and when the battle must be fought out in the degrading mire of bureaucracy—in any of its forms. Nonetheless, before returning to the Survey as a whole, its last days in Japan, its return to Washington, and to the manner in which its findings were reported to the nation, it is appropriate here to take one further time out, in this case to trace the manner in which the origins of USSBS Pacific Report #71a have previously been reported to the public.

* * *

The trouble seems to have begun when the late availability of 71a prevented its appearance by title and number in most early lists of the USSBS reports (although other late-appearing reports, as, for example, *The War Against Japanese Transportation*, USSBS Pacific

Report #54, did include 71a in their appended list of reports). More serious difficulties emerged, however, with the appearance in 1950 of Marshall Andrews's *Disaster Through Air Power* (New York: Rinehart & Company, see esp. pp. 115-16). Distressed at the apparent Air Force victory in the 1949 debate over the relative virtues of the B-36 bomber and the Navy's planned super-carrier, Andrews wrote that "only by means of a book could any viewpoint other than that of proponents of strategic air power be brought adequately before the American public" (p. xi). In the course of attempting to do so, Andrews charged that 71a, "a wonderful collection of half-truths, misconceptions, distortions, unsupportable claims, and self-praise," was somehow illicitly slipped in among the Survey's reports by the Air Force, palming itself off "as the opinion of an impartial civilian board honestly proffering the truth for which it had sought." To his unawareness of the relative priority among the Survey's reports (only six bear the stamp of the chairman's office; all the others are technically supporting documents), Andrews added an innuendo-laden, Devil theory explanation of its origins.

The following year Major (U.S. Army) Lawrence J. Legere, Jr., incorporated Andrews's story, despite the absence of documentation in the Andrews book, in his Ph.D. dissertation ("Unification of the Armed Forces," Harvard University, 1951). This might not have been a problem (most dissertations, after all, are really quite harmless) had not the dissertation become so widely read. Major Legere had been granted access to the jealously guarded JCS files, an almost unheard-of occurrence, and as a result his work became widely read among those who populate the "defense studies" area of political science. By April of 1967, for example, the names of the following luminaries appeared among those who had read the dissertation: Samuel Huntington (three times), Edward L. Katzenbach, Jr. (twice), Paul Y. Hammond (three times), Walt Whitman Rostow, Ernest R. DuPuy, Raymond Dawson (twice), John Ries, Vincent O. Davis, and Robert E. Osgood. The inevitable was bound to happen. Legere's dissertation being on the whole a scholarly piece of work, someone would assume that he had verified the Andrews story about 71a.

Before that happened, however, the Air Force lost the perfect opportunity to set the record straight when the fifth volume of Craven and Cate (*The Army Air Forces in World War II*) was published in 1953. As it happened, however, the only mention of 71a

(pp. 739-40) was so worded as to disguise the fact of its late appearance. As a result, the suspicious reader moving from Andrews to Legere to Craven and Cate might well be led to feel that Andrews must have been correct. This must have been what happened to Vincent O. Davis in his *Postwar Defense Policy and the U.S. Navy, 1943-1946* (University of North Carolina Press, 1966, pp. 154-55) and later in *The Admirals Lobby* (University of North Carolina Press, 1967, p. 219).

Following Legere closely (indeed, all but tripping in his hurry to keep up), Davis told how the report was written by the Air Force "some six months after the USSBS had submitted its final report, closed its records, and gone out of existence. . .;" how "the Air Force then gave its pamphlet a counterfeit cover to match the covers on the official USSBS reports and somehow contrived, in a way not yet clearly understood by outsiders, to insert it as Report No. 71a in the USSBS report series as if it were an authentic part of that record." He then quoted some remarks of Legere's about "the bogus booklet."

Such stories, once repeated, have a curious way of becoming part and parcel of the revealed or traditional wisdom among that circle of writers who address themselves to matters of so-called defense policy. Most recently into the lists comes Robert L. Gallucci whose *Neither Peace Nor Honor: The Politics of American Military Policy in Viet-Nam* was published by the Johns Hopkins University Press in June 1975. In an otherwise valuable and thought-provoking analysis of the bureaucratic politics (imperatives?) involved in bombing policy in Vietnam, Gallucci parrots Davis's story about the Air Force's "sneaking [sic] one of its own volumes into the collection of 316 [sic] other volumes of the United States Strategic Bombing Survey (USSBS) authored by an independent civilian agency" (p. 48).

Presumably there's a moral in all this. If so, the reader is left to draw it on his own, the present writer being satisfied simply to raise the question. At the same time, perhaps the present account may keep still other writers from assuming, for whatever reason, that 71a, *Air Campaigns of the Pacific War*, represents the final conclusions of the Survey as a whole, or of its civilian directors or chairman. (See, for an example, Clark G. Reynolds, *The Fast Carriers: The Forging of an Air Navy*, New York, McGraw-Hill, 1968, pp. 380-82.)

CHAPTER SEVEN

HOME AT LAST: REPORTING TO THE NATION AND CLOSING UP SHOP

... people have preferred to feel rather than to know about strategic bombing.

Noble Frankland

Late in 1945 the Strategic Bombing Survey returned to the United States from Japan. During the spring and summer of 1946 most of its reports were completed and many of the most important among them were released to the public. A few reports were not approved in their final form until the late spring of 1947, and a number of others—primarily those treating the details of physical damage—remained classified documents for several years. This chapter will conclude the narrative account of the Survey's activities; a brief Epilogue will summarize some of the author's reflections and conclusions.

On 25 November 1945 Mr. D'Olier returned from his trip through the Pacific battle areas. The following day he and Paul Nitze discussed their trip at the daily staff conference and approved the final plans for redeployment. The last formal conference of all Divisions was held on 28 November, and two days later the USS *Ancon* departed Tokyo for San Francisco bearing 555 members of the Survey; by 3 December a total of 860 had departed, most of those remaining being military personnel pending reassignment, many of them with occupation forces. After a final courtesy call on General

MacArthur, D'Olier and Nitze departed via aircraft early on 5 December. General Gardner, as deputy to the chairman, remained in Tokyo for another month overseeing last-minute operations. The last formal staff conference was convened by Gardner on 21 December; the official minutes for the meeting read, *in toto*, as follows: "1. General Gardner announced that Christmas would be a holiday."

The majority of those returning to the United States were transported by the Navy, arriving at San Francisco between 14 and 20 December. Civilians and military alike were granted a two-week delay en route (furlough) to spend the holidays with their families, those continuing with the Survey having been ordered to report to the AAF Annex at Gravelly Point, Virginia, on 7 January 1946. Preparations in Washington had been in the charge of Lieutenant Colonel Charles Hurley, who since late 1944 had been the administrative workhorse for the Survey in Washington. After overseeing the processing of civilians and equipment en route to the European Theater, Hurley had gone to Germany for several months as commanding officer of Headquarters (Forward) at Bad Nauheim, returning to Washington in July 1945 to oversee two redeployments (Europe to Japan, then Japan to Washington). His patient, meticulous preparations in Washington went to the extent of finding hotel and apartment space for those returning to Gravelly Point.

Not everyone who had work to finish did it at Gravelly Point. Dr. Monro Spaght, for instance, following the example set by his predecessor, Mr. Robert Russell, reestablished the Oil Division in San Francisco.¹ Similarly, crowded conditions in Washington led to the establishment of the Naval Analysis Division in a "Tempo" behind the Munitions Building, and the Hiroshima and Nagasaki teams of the Physical Damage Division at Fort Belvoir in Virginia; the coding and analysis of Morale Division interviews were done at Swarthmore College in Pennsylvania, where sixty-five students under Dr. David Krech made the work a college project.

At the first meeting after reconvening in Washington, Mr. D'Olier's basic plan was reconfirmed: work would continue at least six days a week with 30 June (the end of the fiscal year and of the Survey's appropriation) as the goal for completing all reports. That this goal proved impossible of attainment has been shown in the preceding chapter. But factors other than inter-service feuding were responsible. As Henry Alexander had once remarked when con-

sidering whether the Survey should continue from Europe to Japan, "Nobody likes to ride a dead horse." This feeling affected military as well as civilian members all the more so by January 1946. General Fairchild had been appointed to head the new Air University at Maxwell Field and wanted General Anderson to set up its senior school, the Air War College. The Navy Department was equally anxious to reassign Admiral Ofstie to liaison duty with the Atomic Energy Commission. More junior officers, with an eye out to their own careers, contemplated with foreboding the idea of remaining too long with an outfit that was going out of business. Civilians, too, had their careers to worry about. Yielding to such pressures, D'Olier and Nitze had to agree that at the higher levels, continued participation in Survey activities would be largely on a part-time, as-needed basis.

In such circumstances, the pattern of continuing work was established as follows: individuals were assigned responsibility and timetables for completing various reports; these in turn would be scrutinized by the editors in the Secretariat, now under Mr. (formerly Lieutenant Commander) Walter Wilds; upon approval at that level the relevant directors would gather at Gravelly Point or the Pentagon to render final approval or disapproval. Further complicating this rather awkward process of coordination were the security restrictions applicable to all matters related to the atomic bombs. Nothing whatsoever could be released to the general public until formal agreement (not only *what* to release but *whether* to release) had been attained among the AEC, the various services, the State Department, and the White House.

The Survey Becomes Public Knowledge

A few days after Mr. D'Olier's initial appointment in October 1944, a very brief notice appeared in an obscure corner of *The New York Times*. The notice announced that D'Olier would head a special mission to undertake an "impartial appraisal" of the effects of strategic bombing.² Nothing further was released until March of 1945 when another short press notice announced that the D'Olier group was at work in Europe; the March press release listed the names of the chairman, vice-chairman, and five of the directors.³ The Survey received no further public notice until late in May when

a *Baltimore Sun* reporter filed a column from Hamburg alleging that bombing evaluation experts had concluded that the bombing of Hamburg's rail facilities had been ineffective.⁴ Based on an unguarded conversation in a hotel room with a member of the Transportation Division, this column caused a flurry of agitation at AAF Headquarters, D'Olier being advised to guard against repetition of the incident.

A secret activity like the Survey could not forever escape the notice of Drew Pearson. His column for 1 September 1945 praised the work of Sergeant Paul Baran and Henry Alexander, concluding with innuendo-laden charges that some business executives had taken advantage of their position to carry home photos of German patents and inventions. Pearson's source was apparently a letter from a disgruntled enlisted photographer who felt overworked and underprivileged. Two weeks later, now certain that skullduggery was afoot, Pearson commented on the still secret plans for redeploying to Japan: "One of the Army's best boondoggling projects is about to get a new lease on life." After identifying the USSBS, he went on: "Under this high-sounding title, big shot business executives have been commuting back and forth across the Atlantic by plane . . . browsing through Germany doing relatively little," etc., etc., etc. But the first significant report of the Survey's work was contained in Hanson Baldwin's column on 2 September, of which the following excerpts suggest a purposeful news leak.

Probably for the first time in history a military campaign is undergoing a minute examination and critique from an official, but predominantly civilian, board. . . . A complete report and analysis of the air war against Germany, which will cover our objectives and methods of attaining them, will be given by this board, with no holds barred. . . . It is expected to be ready for the War Department about mid-September or October. Whether it will be published, except in summary, at that time remains to be seen. This precedent, the critical survey of a military campaign by civilians, has been greeted with astonishment and some concern by some of the older and conservative officers in both the War and Navy Departments. The idea does not appeal to them; they fear that the committee may set a precedent for similar reviews and critiques of ground and naval campaigns.⁵

Fears that only a brief summary of the Survey's findings would be published were soon allayed, and Henry Alexander, aided by a few chosen assistants, finished the *Over-all Report (European War)* and the *Summary Report (European War)* during September. By one means or another, a copy of the 109-page *Over-all Report* found its way into the hands of Fletcher Knebel, Washington-based reporter for the *Cleveland Plain Dealer*, who on 21 October published a fairly accurate summary of the report.

Three days later Henry Alexander gave a press conference at the Pentagon at which he provided copies of both reports and briefly described the Survey's establishment and operations. In the following excerpt from the transcription of that press conference, Alexander is reading the general conclusion of the Survey. The italicized parts are from the text of the report (*Over-all Report*, p. 107; *Summary Report*, pp. 15-16); the rest are his introductory and interjected comments.

Some of the attacks we did not consider effective from the standpoint of decreasing war production. Some were less effective than had been supposed. Others were more effective than had been supposed. The attacks on oil were particularly effective; the effects on transportation were particularly effective. As I say, some were more effective, some less effective; but on the whole, looking at the aggregate results, it was the judgment—combined judgment of us in the Survey—that *allied air power was decisive in the war in Western Europe. Hindsight inevitably suggests that it might have been employed differently or better in some respects. Nevertheless it was decisive. In the air its victory was complete.* And there, I should emphasize the importance of air superiority. Once the air superiority was attained in the spring of 1944, then the results commenced to multiply rapidly. Up until that time when you're fighting the air war and wherever your own forces are limited, the killing results are hard to attain because it takes weight and continuity and it takes repetition to get it. But once that air superiority is attained, it is a question of exploiting it. Here it was exploited, and in our opinion the results were decisive. The testimony of all the German generals—I say all, I mean practically all—of all the German production people and industrial people, is practically unanimous that the air power was impossible for them to overcome, or get around the effect of the air power. In the air the victory was complete. *At sea, its contribution, combined with naval power, brought an end to the enemy's greatest naval threat—the U-boat; on land, it helped turn the tide overwhelmingly in favor of Allied ground forces. Its power and superiority made possible the success of the invasion.*

*It brought the economy which sustained the enemy's armed forces to virtual collapse, although the full effects of this collapse had not reached the enemy's front lines when they were overrun by Allied forces. It brought home to the German people the full impact of modern war with all its horror and suffering. Its imprint on the German nation will be lasting.*⁶

The italicized portions above represent the single most-quoted paragraph from the Survey's findings in Europe. It is important to note that it represents, at best, a muted endorsement of *strategic bombing* as conducted in the European Theater: it does not say "American," it says "Allied;" it does not say "strategic bombing," it says "air power" (which must be taken to include all types of air activity, both Army and Navy); and it does not say "Europe," it says "Western" Europe. It then goes on to point out that significant results were obtained only *after* the invasion in mid-1944, and not quickly enough to cause collapse of the German army prior to its being overrun by the ground armies of the Allies. This general conclusion was a source of great concern to Orvil Anderson, forever fearful that Alexander's carefully chosen words could be picked apart by future critics (as, indeed, they have been).

General Anderson argued repeatedly that the final report should go into *detail* on the difficulties that had been encountered in attaining air superiority over the *Luftwaffe*; unless this was done, he feared, the relatively tepid wording of the conclusions would lead people to think that (1) the strategic bombing forces had apparently wasted their first two years of effort in a hit-or-miss series of attacks, many of them non-productive, and (2) even after deciding to zero in on oil and transportation targets, decisive results were forthcoming "too late." Interestingly enough, he feared this because he knew himself that such deductions were valid *for the European experience*. Attuned as he was toward the future, however, Anderson was struggling somehow to make it clear that the rate of advance in technical proficiency was such that conclusions based on results over Europe, 1942-1945, would prove faulty guides for any similar operations conducted anywhere in the period beginning with the year 1946.

Anderson's argument was that by stressing the *facts* in the record of *past* accomplishments, the Survey was looking in the wrong direction. Instead, he argued, they should seek to identify developing trends and developing capabilities, and their conclusions (here

above all!) should state categorically what these trends and capabilities portended for the future employment of air forces. Utterly future-directed in his thinking, he was all but overwrought by the insistence of Mr. Alexander that (1) the civilian leadership was not competent to suggest strategic principles for future warfare, and (2) the Survey's task was essentially historical, to record what happened, period. Still perplexed over how best to make his case in September 1945, Anderson zeroed in on the failure of the report to stress the importance of attaining air superiority. Alexander's lengthy interjection at the press conference, reflecting Anderson's influence, was little solace; the final conclusion, in writing, published, was what counted.⁷

As it turned out, much of General Anderson's concern was unwarranted. The ground rules for the 24 October press conference included the stipulation that public release might not occur prior to 4:00 P.M. EST, 30 October 1945. Beginning with the evening newscasts on that date, and continuing in newspapers the following day, a number of myths were perpetuated and most headline writers set up their stories in such a way that General Anderson's worries proved largely unnecessary. Lowell Thomas on NBC and Raymond Gram Swing on the ABC Radio Network both treated the matter on the evening of 30 October. Following the Foreword to the *Over-all Report*, comments at the press conference, and an AAF press release of 30 October, both newscasters led their listeners to understand that the Survey had been President Roosevelt's idea, that it had been composed primarily of civilians, and that "therefore" its findings could be taken as "objective and impartial." (It was apparently widely believed—the AAF press release stated it explicitly—that because the dominant influence on the Survey was wielded by civilians, the findings of the group were therefore objective and impartial, an attitude of mind surely reflecting a less complicated era than our own.)

Headline writers the next day generally took their cue from Alexander's sentence, "Allied air power was decisive in the war in Western Europe;" many, however, felt free to translate: "Air Power Beat Reich, D'Olier Survey Finds" (*Philadelphia Enquirer*); "Bombers Beat Germany Civilian Survey Finds" (*Washington Times-Herald*); "Strategic Bombing of Germany is Termed Decisive in Victory" (*New York Herald Tribune*); "They Missed the Pickle Barrel But They Smashed Hitler" (editorial in the *Philadelphia*

Record). Many papers printed the *Summary Report* either in whole or part. In virtually every case, achievement was stressed and criticism played down, although during the next week, editorial writers occasionally had second thoughts, the *Chicago Daily News* warning, for example, that "we'll still need armies and navies."⁸

While all this was going on, D'Olier was in Japan, having given Alexander and Colonel McNamee full authority to oversee public release of the first two European reports. A glowing report of their publicity was brought to Japan by McNamee early in November, serving the purpose of timely inspirational fodder at the staff conference of 12 November in Tokyo. In the months that followed, beginning with the report of the Medical Branch of the Morale Division in December, numerous other reports were made public, the order of release depending upon (1) when they were ready, (2) how well they avoided intra-Survey disagreement, and (3) whether the report contained security-classified data. Eventually, a total of 212 European reports were prepared, all but three of which were published in one form or another. Many of them, like Orwell's animals, are more equal than others, only three bearing the unqualified approval of the chairman's office.⁹

Upon returning from Tokyo to Washington, then, Franklin D'Olier had become somewhat of a celebrity. Washington bigwigs, in and out of uniform, paid him court while he attempted to juggle his three responsibilities: finishing up the European reports, getting underway with the Pacific reports, and tending to his responsibilities at the Prudential Insurance Company, of which he was still senior executive officer. The main order of business, of course, was "the chairman's report" on the war in the Pacific. As he had done with Alexander in Europe, D'Olier passed this responsibility to Paul Nitze.

When the chairman's report for Europe developed into a document of over one hundred pages, a decision was made to put out a condensed version (hence the *Summary Report* in addition to the *Over-all Report*), hopefully thereby to encourage a wider reading audience. Similar duplication of effort was avoided with the Pacific report, Nitze and D'Olier agreeing that a short, concise report of thirty or so pages would be sufficient. The next question was whether the chairman's office itself would issue any other reports. Deciding that something, surely, should treat the atomic bomb attacks, and recognizing that the detailed reports being prepared by the Physical

Damage Division were bound to contain classified information, they decided to issue a brief and very general account of the *effects* of the two attacks. Finally, there was the endlessly fascinating question of why the Japanese took so long to surrender. Responsibility for preparing a special report on that question was given to Walter Wilds. As a result, three reports bore the stamp of the chairman's office: *Summary Report (Pacific War)*, the chairman's report; *The Effects of Atomic Bombs on Hiroshima and Nagasaki*, extremely general, treating not the bombs themselves or the means of delivery, but simply effects;¹⁰ and *Japan's Struggle to End the War*.¹¹

The chairman's report, as compiled by Paul Nitze, turned out to be rather more than a report on the effects of strategic bombing; as its title implied, it was a "summary report of the war in the Pacific," fifteen of its thirty-two pages treating the period prior to the beginning of the air attack against the home islands. It is interesting to note that this report, written so soon after the events, set the pattern for virtually all future historical interpretations of the war as a whole. The reasons Japan went to war, the limited means at her disposal, the assumptions on which the decision was based, the early success leading to a gamble on a further expansion of conquest than was originally planned—all these themes, basic to most subsequent histories, are clearly delineated. As for the results of the air attacks, three short paragraphs sum up the Survey's basic findings:

Based on a detailed investigation of all the facts, and supported by the testimony of the surviving Japanese leaders involved, it is the Survey's opinion that certainly prior to 31 December 1945, and in all probability prior to 1 November 1945, Japan would have surrendered even if the atomic bombs had not been dropped, even if Russia had not entered the war, and even if no invasion had been planned or contemplated.

.....
The experience of the Pacific war supports the findings of the Survey in Europe that heavy, sustained and accurate attack against carefully selected targets is required to produce decisive results when attacking an enemy's sustaining resources. It further supports the findings in Germany that no nation can long survive the free exploitation of air weapons over its homeland. For the future it is important fully to grasp the fact that enemy planes enjoying control of the sky over one's head can be as disastrous to one's country as its occupation by physical invasion.
.....

We underestimated the ability of our air attack on Japan's home islands, coupled as it was with blockade and previous military defeats, to achieve unconditional surrender without invasion. By July 1945, the weight of our air attack had as yet reached only a fraction of its planned proportion. Japan's industrial potential had been fatally reduced, her civilian population had lost its confidence in victory and was approaching the limit of its endurance, and her leaders, convinced of the inevitability of defeat, were preparing to accept surrender. The only remaining problem was the timing and terms of that surrender.

Having entered the war inadequately prepared, we continued all-out mobilization of all resources to bring ever increasing pressure on Japan, beyond the time when this was still reasonably required.

Partly as a result of seeing at first hand the effects of the atomic bombs, the chairman's report for the Pacific was much more future-directed than its counterpart for Europe. Also contributing to this tendency to give warning of future needs were (1) the growing confidence of the Survey's top echelon in their ability to comment on the potentialities of air warfare, (2) dismay over the absence prior to attack on the home islands of valid intelligence data about the enemy's war economy, and (3) a striking awareness of how poorly integrated had been the military and naval effort of the Japanese. Where the chairman's report for Europe had ended with two carefully worded sections labelled "Some Signposts," and "Of the Future," the Pacific report eschewed such language in favor of straightforward "Recommendations." These included pleas for (1) an ongoing, forceful program of research and development, (2) an integrated, peacetime establishment for the collection of intelligence data, (3) an integration of U.S. military establishments, and (4) an awareness that carefully husbanded strength could be a force for peace.

It was with regard to the third recommendation, an integration of U.S. military establishments, that the wording of the Survey's comments caused concern in some circles, confusion in others, and dismay to General Orvil Anderson. Citing the thorough absence of coordination between the Japanese military and naval establishments, along with the legislation pending before Congress that called for integrating U.S. military forces, the report stated that the "prompt passage of such legislation is in the national interest." Along with its recommendation about a continuing intelligence-

gathering organization—an endorsement that aided a widespread feeling that led to the establishment of the Central Intelligence Agency—the Survey's comments about service integration—"unification" as it came to be called—were important for the future.

Coming to specifics, the report noted: "Within a department of common defense which provides unity of command and is itself oriented toward air and new weapons, the Survey believes that, in addition to the Army and Navy, there should be an equal and coordinate position for a third establishment." Reading these words one can see them all—Arnold, Spaatz, Eaker, Fairchild, Kuter, Anderson, joined by most of their colleagues and the ghost of Billy Mitchell—leap to their feet in resounding applause. But that sentence was followed by others whose meaning was obscure at best and disheartening at worst. The paragraph continued:

To this [third] establishment should be given primary responsibility for passive and active defense against long range attack on our cities, industries and other sustaining resources; for strategic attack, whether by airplane or guided missile; and for all air units other than carrier air and such land-based air units as can be more effective as component parts of the Army or Navy. The mission of such a new establishment would differ considerably from that of an autonomous air force and would, in certain respects, require additional and broader experience than has heretofore been required by the Army air forces alone.¹²

"Whatever could this mean?" agonized General Anderson, the airman most intimately concerned. A third establishment, yes; primary responsibility for strategic attack and active defense against air attack, certainly yes also. But what was meant by "passive defense"? Was a newly independent air force to be saddled with the contradictory (if not, indeed, "unmilitary") mission of civil defense? And what was this business about "land-based air units as can be more effective as component parts of the Army and Navy"? Anderson had fussed at Henry Alexander for refusing to "draw the lessons for the future" in the European report; now here was Paul Nitze doing just that, but in a way apparently calculated to restrict the ability to concentrate air resources under a single command.

Even before the report was released to the public late in July 1946, Anderson took the extraordinary step of writing to the secretary of war to express his reservations. Arguing that the report "lacks the focus, strength, and impact required to make it a compelling instru-

ment of constructive military reform," Anderson noted that "in its present form it may invite controversy through divergent interpretations of the facts as presented." Particularly galling to Anderson were the comments cited above about the mission of the third establishment.

Facts assembled by the Survey give full support to its conclusion that a third establishment is required in the immediate interest of national security. However, no factual data gathered by the Survey will support its prediction of the mission for the third arm. In defining this mission, the Survey is preconceiving the pattern of future war and is restricting and limiting the agency which operates in the third element to passive and active defense and long-range attack. It is imperative that no military arm be restricted in the scope of the operations it may conduct in its own element. . . . Likewise, the Survey's implied proposal to trisect the Air Arm between the Navy, Army and the third establishment cannot be supported by the data which was assembled. This proposal is contrary to the broad objectives of unification and, if adopted, will effectively vitiate the military potentiality of Airpower. If this policy is pursued, Airpower will be robbed of its flexibility and will lose the ability to effect decisive concentration during that phase of war wherein air operations constitute the major effort. . . . The establishment of specialized aviation within the ground arm to perform only surface support operations and the assignment of land-based aviation to the Navy would, in effect, produce three competing air forces and would prevent the effective employment of the Airpower of the Nation.¹³

As should be clear from General Anderson's choice of words, he had emerged from the war with the conviction that air warfare, if it were to reach its peak effectiveness, must be controlled and directed *in its entirety* from a central point. This view, only natural in one who had agonized over the "piecemealing" of the air effort in both Europe and the Pacific, could never be accepted by soldiers and sailors who looked on the air weapon as another tool to help them in their own elements. Recognizing this, cooler heads—especially Generals Arnold and Spaatz—did their best to convince Anderson to settle for something less than total victory; advising him to concentrate on the "good" parts of the report and ignore the rest, they at length prevailed upon him to accept the report as the best that could be obtained in the circumstances. As a result, so far as the public could tell, the AAF expressed no reservations about the

chairman's report. But privately Anderson remained adamant, and no one was more aware of Anderson's true feelings than Admiral Ofstie. It was in large part owing to Anderson's aggressive determination to squeeze out every possible advantage for the future Air Force that Ofstie, in his turn, escalated the "great Anderson-Navy war" in the months that followed.¹⁴

In the same letter to the secretary of war cited above, Anderson also complained about a problem that had plagued the Survey's report writers from the very beginning—the selective citing of statistics. Referring to figures given on page eleven of the chairman's report, Anderson cited the following example:

. . . the primary mission of submarines is to sink ships. In the furtherance of this mission, they devoted practically all of their effort in the Pacific and sank more than 50 percent of the Japanese merchant fleet. The Army Air Forces sank only 19 percent of the Japanese merchant fleet, according to the Survey's figures, but, in so doing, *devoted only 1.7 percent of their total effort*. This latter fact is neither analyzed nor stated in the Summary Report. Simply the figures on tonnage sunk are presented. This type of presentation, even though innocent of bias, can easily confuse the layman and invites an improper evaluation of the potentialities of weapons.

Then as now, however, the problems inherent in dealing with statistics, artfully or innocently chosen, could never be solved to everyone's satisfaction. And it is only fair to note that the official history of the Army Air Forces in World War II can be shown to have taken liberties similar to those complained of by General Anderson. Consider, for example, the following sentences:

The blockade depended on interdiction and attrition of shipping; in both respects air power had been important, accounting by USSBS estimates for 40 percent of all shipping sunk. Mines planted by B-29's in a campaign that lasted only five months sank 9.3 percent of all merchant tonnage lost during the war.¹⁵

Now it is perfectly possible for the layman reading these lines to interpret "air power" as Army Air Forces (40 percent) and to assume that the following sentence about the mining campaign is meant to imply an additional 9.3 percent, for a total of 49.3 percent sunk by "air power." Although they dutifully cited the chairman's report as

their source, Craven and Cate obfuscated the issue. The complete figures in the chairman's report are as follows:

Agent	Percent of merchant tonnage sunk
Submarines	54.7
Carrier air	16.3
Army land-based air	10.2
Navy & Marine land-based air	4.3
Mining campaign (primarily B-29s)	9.3
Surface gunfire	less than 1 percent
Marine accidents	4.0

Thus most of the 40 percent cited by Craven and Cate as attributable to "air power" was sunk by Navy and Marine aircraft, and the 9.3 percent is not in addition to, but a part of, the 40 percent.

Problems of interpretation continued to color the deliberations of the Survey throughout the concluding phase of its activities in Washington. The most significant controversy, that surrounding Pacific reports numbers 73 and 71a, was treated in detail in the preceding chapter. Another offshoot of that controversy, actually one of the opening shots in the battle, was the appearance late in 1946 of report number 72, *Interrogations of Japanese Officials*, in two volumes. Published by the Navy, but carrying on their covers the USSBS identification, these volumes contained 118 interrogations of Japanese *Naval* officials; none of the 118 pertained to strategic bombing. The AAF countered these volumes with one of its own, but made no pretense that it was a USSBS document; even though compiled in part from USSBS interrogations, the publication made no reference whatsoever to the Survey.¹⁶

The reports compiled by the predominantly civilian Divisions of the Survey had much smoother sailing. In virtually every case they represent calm, dispassionate attempts to cite the evidence applicable to their field of interest. Perhaps the only exception was the final report of the Transportation Division. Reflecting the vigorous attempt by the directors in June 1945 to get the JTG to make Japanese shipping and rail transport the primary target, that report was frankly critical of the failure to have done so early in the war.¹⁷ On the whole, however, the civilian elements of the Survey managed to complete their work while remaining on speaking terms with one another.

The original plan to dissolve the Survey by 30 June 1946 proved

incapable of attainment. It was not until late in the spring of 1947 that the last reports were sent to the Government Printing Office, and someone had to remain on hand, at least in a part-time capacity, to keep track of last minute details. A final problem that proved to be time-consuming centered on the disposition of the Survey's records. Originally established as a special activity under the Office of the Secretary of War, the Survey had no natural heir; this was especially true by late 1946 when it became apparent to most observers that OSW's days were numbered—that legislation then pending before Congress would result in a thorough reorganization of the armed services. After a number of meetings, Mr. D'Olier decided that the Survey's independent status should be preserved even as concerned the disposition of its records. Rejecting suggestions that a new Department of the Air Force would be the "natural" place for the records to go, D'Olier elected instead to negotiate with the National Archives.

Late in 1946, Dr. Solon J. Buck, then archivist of the United States, agreed to maintain the records provided some agency more qualified than his would assume responsibility for controlling access to the classified materials contained therein. Further discussions followed, and at length the director of the Central Intelligence Group (CIG, reorganized in 1947 as the CIA) agreed to assume responsibility for granting access. Several more months were required to put the records in some kind of consistent order—among the least successful of the Survey's accomplishments—and compile a general index of the materials. All of this work was completed late in the summer of 1947 under the capable, but by now wearying, stewardship of Lieutenant Colonel Charles Hurley. Late in September 1947, Colonel Hurley, in a personal letter to Colonel McNamee congratulating the latter on his Legion of Merit, noted that "the Survey is now down to a strength of two, Sergeant Black and myself. We are operating a form of liaison office to National Archives and C.I.G."¹⁸ A few weeks later, the last entry was made in the Sign-in/Sign-out Register of the Survey: Hurley, Charles, Lt. Col. 0-286537, A.C., 8 Oct 47, 1700 hours, signed "out;" Destination: Office, Secretary of the Army; Status: PCS (permanent change of station).¹⁹

CHAPTER EIGHT

LOOKING BACK: AN EPILOGUE

Thucydides writes the history of a single war, which was neither glorious nor beneficial and would have been better unfought or, failing that, should have been deliberately consigned to oblivion and concealed from posterity. The badness of his subject is betrayed by his own preface, in which he remarks that in this war a number of Hellenic countries were devastated, . . . and that the expatriation of populations and destruction of life were on an unparalleled scale. . . . Thus the reader, who has no desire to hear of all these misfortunes . . . is repelled by the author's subject by the time that he has finished his preface.

Dionysius of Halicarnassus

Thus did grumpy old Dionysius, as crusty a pedant as the Augustan Age produced, dismiss the work of the world's greatest historian. Yet when he spoke of how the "badness" of his subject was sufficient to repel the readers of Thucydides, the old rhetorician expressed an attitude of mind that has remained fiercely dominant in the Western tradition—or at least in that part of it that in any age can be identified with the intellectual or liberal elements. "War is evil; evilness is unpleasant (not to mention ungodly); dwelling upon unpleasantness is to be avoided; hence, war is hardly a fit subject to spend much time reading about." Among modern practitioners in the field of military history, a general feeling exists that this attitude of mind has at length been overcome; in my own mind I suspect they misread minor progress for success. The attitude is still widespread and in part accounts for the little attention paid to the reports of the Strategic Bombing Survey. That question—To what use was put the work of the Survey?—is one of several to be considered in this chapter.

Among others to be considered are the following: How well did the Survey perform its appointed task? What shortcomings in military planning, techniques, and organization were revealed by the Survey? Was the composition of the Survey such as to assure its ability to perform the intended task? Certain other questions, many of them adumbrated in the Preface, have already been answered in the narrative. Nonetheless, it might be well to summarize some of the conclusions that may be drawn at this point.

The roots of the idea that created the Survey go back well before November 1944 when President Roosevelt signed the letter that became the implementing directive. It was as a result of the deliberations during 1943 of the Committee of Operations Analysts that the question first arose—How can we verify the validity of our targeting assumptions and the demonstrated value of the advice (recommendations) of the Committee? Another root, coming into play in late 1943 and early 1944, was the interest of the Target Sections in the office of the Assistant Chief of Air Staff, Intelligence, Army Air Forces. The COA was an advisory group; the Target Sections were the primary staff agents responsible for preparing any formal recommendations forwarded from Headquarters to commanders in the theater of operations. For the Target Sections truly to complete their task—or even to improve their ability during the war—they needed information about the results of actual bombing operations.

A third root, much more difficult to pinpoint than the others, was a growing feeling at the highest levels of the Air Staff—fostered primarily by Generals Arnold, Fairchild, and Kuter—that a full-scale evaluation of the strategic bombing campaigns should be undertaken. If nothing else, such a review would serve the perfectly normal military goal of the “after action report”—how did it go, what did we do right, what wrong, what can we learn from the experience? And as 1943 passed into 1944, one must remember, there was plenty of reason to question how well-based were the assumptions on which tactical doctrine and target selection had been based; results in line with expectations had not been forthcoming.

Another difficult question was that of who was qualified to evaluate a campaign directed at elements of the sustaining economic resources of an enemy nation. Among the officers of the AAF, those looked upon as the best and brightest were fully occupied in key

operations or staff assignments and could be stolen away from such duties only at the risk—as their commanders would insist—of “impeding the war effort.” Yet even among any such hypothetical group of “fast burners,” few could be expected to have extensive knowledge and experience in economic planning, production management, petroleum refining, etc. So it soon became obvious that a large number of highly competent civilian specialists would be required. It then became an immediate question of whether, if the quality of men sought could be obtained, they would be willing to devote their time to an effort controlled by military officers. In considering such questions, the qualities of mind of General Arnold, General Fairchild, and Assistant Secretary Lovett became decisive.

No airman—not Douhet, not Mitchell, not Trenchard—was ever more fully aware of the potential effects for air forces of scientific and technological advances than Arnold. This facet of Arnold's personality, made clear in his memoirs, comes through with striking clarity in Theodore von Karman's report of a conversation at La Guardia Airport in September 1944.

General Arnold wasted no time in coming to the point: “We have won this war, and I am no longer interested in it. I do not think we should spend time debating whether we obtained the victory by sheer power or by some qualitative superiority. Only one thing should concern us. What is the future of air power and aerial warfare?” . . . I listened with fascination . . . Arnold was already casting his sights beyond the war, and realizing, as he always had, that the technical genius which could help find answers for him was not cooped up in military or civilian bureaucracy, but was to be found in universities and in the people at large.¹

Thus, unlike many of his juniors, Arnold was unencumbered by forebodings of what any group of highly qualified and independent civilians might find or report; indeed, he actively sought every opportunity to obtain recommendations and viewpoints from outside the normal staff structure. His creation of the Advisory Council under Colonels Cabell and Norstad early in 1942 was only one of many such attempts to assure that someone nearby would be helping him with what he liked to call his “blue sky thinking.”

That General Fairchild held similar views on the utility of civilian specialists was shown in Chapter Two. As for Lovett, though he would

hardly have looked upon the matter in such terms, he need look no further than his own example to find that a modern air force needed all sorts of specialist techniques not ordinarily found among the uniformed members of a service. These attitudes, together with the demonstrated effectiveness early in the war of Vannevar Bush's NDRC and the work of operations analysts in the theaters of operations, created an atmosphere conducive to creating a predominantly civilian board to evaluate the bombing campaigns.² All that was lacking was the endorsement of such an irregular idea by the responsible commander in the field.

On 5 April 1944 General Spaatz, Commanding USSTAF, provided that endorsement in the letter originally drafted by Colonel Ames shortly after the latter's arrival in London (Chapter Three). Thereafter, only three matters impeded further progress: (1) the press of other business at AAF Headquarters; (2) the normal staff process of working out the details and securing general agreement on principles; and (3) finding an eminent, objective, yet presumably not unfriendly chairman whose prestige would assure the public that the project was meant to be both serious and impartial.

Since the whole idea of an impartial evaluation was attended by a degree of risk on the part of the AAF, some assurance was necessary that the chairman-to-be was not congenitally hostile either to the military in general or the air forces in particular. Franklin D'Olier, although considered quite late in the process, fulfilled every requirement, whether formal or informal, stated or unstated.

The Strategic Bombing Survey, then, evolved from within the AAF, inspired both by unforeseen needs and by unarticulated hopes. At worst the Survey would provide presumably precise data of immediate utility in the war against Japan; at best it would provide a glowing report on the part played by strategic air forces in the winning of the war. And the risks attendant upon the public disclosure of its findings were attenuated by a general agreement that its activities would remain classified, at least until such time as the secretary of war might decide otherwise.

The organization and composition of the Survey (Chapters Four, Five) bring us to one of the questions suggested at the beginning of the present chapter: Was its composition such as to assure its ability to perform the intended task? The best answer, it would seem, is a qualified yes, qualified in the sense that, looking back, it might well have been improved in a few respects.

The people who made up the highest levels of the Survey were essentially business executives, corporation lawyers, and bankers—in short, executives or “doers” of one sort or another; this fact, together with the continuing pressure from AAF Headquarters to speed up the flow of information of potential use in the Pacific, led the Survey as a whole into conflicting goals. On the one hand, they sought a “speedy and timely review” that could be of immediate utility; on the other, they sought to provide a detailed account of bombing effects that could serve as the conclusive record for the future. Operating in an atmosphere of unending turbulence, the duality of their goals accounted in large part for most disagreements that occurred, as well as for whatever discontinuities and internal inconsistencies mar the published reports. As should be clear from the narrative, however, the leadership of the Survey cannot be held responsible for the concurrent existence of long-range and short-term goals; time, place, and circumstances beyond D'Olier's control made this situation inevitable. This is true even though there were those among his associates who *individually* favored a quick overview while others marched to the beat of a more distant drummer.

At the level of so-called middle management of the Survey was a combination of production experts drawn from various industries and military officers, many of the latter with backgrounds in corporation management, production, or the law. Occasionally intruding themselves at this level—indeed, one director so qualified—were a few academics, primarily from the field of economics. Why, then, this emphasis on corporation executives, industrial production experts, lawyers of the executive type, and economists?

The answer would seem to lie in the initial briefings given to D'Olier, Alexander, and Lovett by the airmen—primarily Generals Fairchild and Kuter, assisted by Colonel Perera—charged with explaining strategic bombing to the novices. Although it was evident by late 1944 that strategic bombing included, in practice, much more than “precision bombardment of carefully selected targets in the enemy war economy,” the explanations of Fairchild and Perera were limited essentially to (1) the theory evolved at the Air Corps Tactical School in the thirties, and (2) the prior work of the COA on target selection. Thus, the emphasis accorded to what strategic bombing had been *envisaged* to become played a dominant part in determining how and by what sorts of people it should be

evaluated. By VE-Day, however, the effort of the heavy bombers, impelled by circumstances, chance, and personalities, had come to include much more than selective destruction of carefully pinpointed targets. The figures speak for themselves:

Bomb Tonnage Dropped at Principal Target Systems³

Target System	Percent of Total (AAF and RAF) Tonnage
Aircraft factories	1.8
Miscellaneous manufacturing	2.6
Naval & water transportation	4.2
V-Weapon launching sites	2.0
Airfields and airdromes	6.9
Oil, chemical, and rubber	9.3
Military (supporting Ground Forces)	11.1
Industrial areas	23.7
Land transportation	32.1
All other	6.3
	100.0

Adding together the percentages for aircraft factories, miscellaneous manufacturing, and oil, chemical, and rubber targets yields a total of less than 14 percent of the effort expended, as measured by aimed tonnages. And yet these three categories include most of the carefully selected industrial targets designated for precision attack. The conclusion to be drawn is obvious: the Survey, owing to its initial composition, which resulted in turn from what some people had *thought* constituted strategic bombing, was not really prepared to measure, in the widest sense, the effects of what actually happened. Measured against the effort finally expended, for example, it had too many people involved in measuring the effects of bombing aircraft factories and too few engaged in the fields of land transportation or industrial area attacks.

The foregoing comments, however, should not be taken as carping criticism; they represent only one way of looking at the problem. It is equally important to remember what it was that the AAF *wanted* to measure and evaluate; and that, quite specifically, was the effects primarily of the attacks they had consciously planned and chosen. That they had had to attack V-Weapon launching sites, that they had had to devote more than 10 percent of their effort to supporting

the ground forces, that they had had to resort in bad weather to attacks on industrial areas rather than specific factories—these along with other necessary “diversions” were facts of life, the benefits accruing thereby to be catalogued, to be sure, but the facts themselves to be regretted rather than highlighted. Looked at in this light, not a man was wasted in the Aircraft, Oil, or Equipment Divisions. In fact, the emphasis accorded the evaluation of precision attacks led to what was probably the most significant of the Survey’s conclusions—that only *repeated* and *sustained* attack could assure the permanent dislocation of manufacturing effort.⁴

Discounting hindsight, is it possible to identify any obvious shortcomings in the composition of the Survey? I would suggest three areas or specialties that seem curiously lacking at the director’s level. First, where was the “labor representative”? Manufacturing involves workers, and while the morale of factory workers was never an AAF target, it nonetheless seems odd that neither a former secretary of labor nor a noted union official was included among the directors. On the other hand, there was a certain aura of the Eastern Establishment banking-and-commercial “complex” (a forerunner to the so-called “military-industrial complex”) hanging over the meetings of the directors; in all probability, neither D’Olier nor Alexander ever gave the matter a thought. As a result, what little was done to measure the real effects of bombing on the labor situation was carried out by statistically-oriented economists (in Overall Economic Effects) or psychologists (in Morale). One cannot help wondering whether either group was really competent either to ask the right questions or to interpret the answers with empathy and understanding.⁵

It seems equally improvident for the Survey not to have included one or more senior and experienced ground force commanders on a continuing and active basis. The failure to do so led the Survey to abandon, in favor of the AAF Evaluation Board, the task of evaluating tactical support. True, General Omar Bradley was on the Board of Military Advisors and submitted a report (Chapter Five), but that report was drawn up largely by Army men unfamiliar with the workings or intent of the Survey and inclined to concentrate on the shortcomings rather than the achievements of heavy bombers used in the tactical support role. Here the AAF more than D’Olier made the decision and, in the event, may have missed the boat. Often angered, or at least displeased, at the requirement to “divert” the

bombers to tactical support, Generals Spaatz, Doolittle, and Orvil Anderson overlooked the probable gains to be achieved by actively involving a senior infantryman in their deliberations. The very nature of such involvement—and, hence, enforced cooperation—then as now is such as to produce complimentary rather than critical reports. At the same time, the civilian members of the Survey would have seen much more clearly than they did at the time the effects on bombing policy of the continuing tug of war that went on behind the scenes.

A third specialty lacking in the inner councils of the Survey's top level was that of the historian. That they should have their historian, someone to keep a record, they had no doubt. But that they should have one or two of the country's most noted historians working with them in an *advisory* capacity never entered their heads. It seems evident that the very nature of their task required the presence of an historian noted for his ability to ask tough questions of the evidence.

Put simply, the presence of a questioning and persuasive historian might well have had the effect of bringing into better balance the collection and interpretation of evidence, a matter decided in most part for the Survey by the force of personality exerted in the lawyer's atmosphere of the adversary process, whether in open meeting or private conversation. Trained historians, however, work from different presuppositions than trained "scientists"—a term taken here to include economists, social scientists including political scientists, and even lawyers when they exert their skills at the rationalization, or the breaking down into discrete parts, of a problem. The sensible historian is never very sure that he can discern the complicated relationships between cause and effect, whereas those more attuned to the scientific method generally assume that uncovering such relationships is precisely what they are supposed to do. Sometimes the scientist—again, in the broad sense defined above—leaves his laboratory (classroom, office, textbooks, ivory tower) to bring his special knowledge to bear on complex *human* problems such as, in this instance, weighing the effects of certain actions taken in a war situation. More familiar with his discipline than with the complex nature of contributing and countervailing influences on the flow of a *never static process* like that of battle (campaign, war), the scientist tends to try to limit the available information to what he can work with, if not to what relates primarily to his specific area of presumed competence. He is almost

forced to develop tunnel vision of a sort; he cannot simply throw up his hands, he *must* reduce the matter at hand to something workable. His analytical and quantitatively-inclined mind sets out to reduce the problem; and each step he takes "forward" represents, in fact, a step *away* from the total reality of the situation he is trying to describe or explain.

How do these observations apply to the Survey? They do in that most of the experts employed by the Survey were anything but properly humble historians; they were objective, specialist practitioners, chosen for their task *because* they were that. Aided by the independent nature of the relationships between Divisions of the Survey, they soon found themselves arguing—to take one example—not about the effects of bombing on aircraft factories, but about whether the attacks on aircraft factories were more significant than those on aviation gasoline production. And more often than not, an individual's attitude was determined by the Division to which he was assigned. True, such debates, when significant, were resolved at the level of the directors; but it was equally true that even there the adversary process ruled supreme, with an insurance man (D'Olier) and two investment bankers (Alexander and Nitze) holding the reins of authority. While these men did a good job, I would nonetheless hold that they could have benefited—as could others who might someday undertake similar tasks—from the presence in their councils of a William L. Langer or a Carl Becker.

So much for special pleading. I have said that "these men did a good job," which brings us to another question raised at the beginning of this chapter—How well did the Survey perform its appointed task? The answer would seem to be that they did fairly well what was, on the whole, an impossible job. What the directors and those who sponsored the Survey really hoped to find was some precise measurement of the *effectiveness* of strategic bombing as an instrument of final victory. What they found they had to settle for, however, was the measure of *effects* rather than effectiveness. The problem is that the measuring of effectiveness changes relative to the level at which it is applied in the process of decision making. One example should suffice to make the point.

Suppose a decision is made to take out a plant producing ball bearings; suppose one hundred bombers are despatched and succeed in utterly demolishing the plant. So far as the commanders and crews are concerned, the effectiveness of the mission is taken for

granted to be 100 percent—the given target was attacked and destroyed. But suppose, also, that the ball bearing output of the destroyed plant is never missed by the enemy throughout the remainder of the war—either because of huge stockpiles or alternative sources of supply. In such a case, the effectiveness of the mission in speeding up victory drops to zero; indeed, the question then arises, when one asks how the one hundred sorties might otherwise have been applied, whether or not the mission's effectiveness should be described as a negative (or minus) value. Thus, to measure effectiveness, as opposed to effects, becomes a problem of such magnitude as to be impractical, requiring as it does the evaluation of an almost limitless number of decisions leading up to the attack order.

Contributing to the difficulty in measuring effectiveness was the inability to separate the effects of air action from those of the other arms. When General Patton's Third Army swept past abandoned enemy tanks, in perfect running condition but with empty fuel tanks, it was reasonable to assume that this circumstance was somehow owing to the air attacks on German fuel production. But as the men of the Survey worried, who could be *certain*? A breakthrough had been made, the enemy was on the run; perhaps the whole logistical system behind the defending enemy tanks had been thrown out of gear through fear, panic, or ineptitude or—further to complicate the measurement—by air attacks against enemy *transportation* (railways and trucks carrying the fuel to the front). In other words, the concurrent activities of all arms during the last six months of the war in Europe could never be scientifically separated into discrete elements; in the Pacific, the long naval war that preceded air attack on Japan only increased this difficulty.

One other factor limiting the Survey's ability to evaluate the effectiveness of strategic bombing was the decision, made by D'Olier himself, not to seek a precise definition of strategic bombing. Strategic bombing, for the Survey, was bombing conducted by air forces designated as strategic, regardless of the targets attacked. Some airmen and some among the Survey's lower echelons argued that strategic bombing be subdivided into, for instance, strategic economic bombing and strategic military bombing (or tactical support rendered by heavy bombers). D'Olier, encouraged by the senior air commanders who wanted assurance that no part of their effort would be ignored in the final reckoning and himself concerned

to assure that his problem would not become more complicated than it already was, resisted all such suggestions.⁶ Yet if a degree of precision was thereby forfeited, surely D'Olier cannot be blamed; the airmen themselves, then as now, always avoided any attempt so precisely to define their effort as to run the risk of limiting their ace in the hole—the *flexibility* of air power, centrally controlled, in a war situation.⁷

Finally, one must always bear in mind that the Survey was, in essence, a huge committee, subject to all the advantages and disadvantages that accrue to committee processes. Moreover, it was one of that special type of advisory or fact-finding committee that the U.S. government from time to time appoints for the purpose of rendering a report on a difficult problem. Generally known as the "_____ Commission" (after the name of the man in charge; e.g., Warren, Kerner, Rockefeller, etc.), such commissions have been a part of the American governmental style since at least 1794 when President Washington appointed one to investigate rebellious groups in Pennsylvania that were threatening the nation with civil disorder. All such commissions operate in a political milieu that tends to place restrictions on their ability to report, with utter candor, their findings or recommendations. The members are always aware that a report unacceptable to the appointing authority, usually the President, will serve no useful purpose whatever; it will either be suppressed, played down, or ignored. The degree to which any such considerations apply to the Strategic Bombing Survey I leave to the reader to decide on the basis of the foregoing account; but for those interested in such abstractions, I recommend most highly, as a starting point, the published reflections of Mrs. Elizabeth B. Drew on the general topic of "government by commission."⁸

Given the preceding qualifications, it must be admitted that the D'Olier Commission performed a most difficult task as well as could reasonably be expected. If they were unable to define with precision (and for Americans that means a mathematical representation, usually in the form of a percentage) the degree to which final victory was owing to strategic bombing, they nonetheless did manage to compile (1) a definitive record of the bombing effort, (2) a series of careful and very capable reports on bombing effects—including those of various types of bombs on various targets, and (3) specific findings on where, how, and to what extent prewar assumptions and expectations about bombing had been found ambitious at best,

wrong at worst.

The Survey's comments about many prewar assumptions that proved wanting in the test of battle were essentially unnecessary. No one, for example, needed to be reminded that unescorted bomber formations had suffered unacceptable losses. By the same token, the airmen themselves had come to realize that enemy civilian morale could be affected decisively only when the extent and weight of attack reached proportions altogether unacceptable to the humanitarian instincts of the governments and peoples the bombers were *defending*. Similarly, the airmen themselves learned that their prewar bombing experiments—primarily aiming single bombs at X's drawn on the ground—had failed to provide any really useful data about bomb effects on various types of structures. Nor did the airmen need to be reminded that prewar intelligence about potential enemies had proved hopelessly inadequate; with or without the Survey's recommendations, the CIA, or some similar organization, was bound to be created.⁹

In one respect, however, the Survey told the airmen something that needed to be said and said loudly, both to airmen—congenitally aggressive optimists—and to politicians—often unembarrassed by any precise knowledge of air warfare. This was that decisive results can be expected only when bombing attacks are repeated, sustained, and heavy. Events since 1945 have shown that this lesson of World War II needs repeatedly to be drawn lest modern air forces, anxious to perform tasks allotted to them, fall into the same error of expecting too much from sporadic attacks.¹⁰ In recent years two former members of the Survey have, with varying success, done their best at the highest levels of government to make this point.

During the Cuban Missile Crisis of 1962, Undersecretary of State George Ball was the first among the top advisors to come out wholeheartedly against the idea of responding by means of a "surgical air strike" aimed at destroying the missile sites in Cuba. Later, in 1965 and 1966, his dismay over President Johnson's decisions to set in motion the limited bombing of North Vietnam was partly responsible for his resignation. Still later, during the agonizing that preceded the bombing halt of March 1968, both Ball—"Ol' stop-the-bombing George," as he is reputed to have been called by the President—and Paul Nitze, then deputy secretary of defense, played major roles in bringing about the education of Secretary of Defense

Clark Clifford.¹¹

Nitze (and Ball, too, for that matter) had argued as early as 1961 against the "limited commitment" of U.S. combat troops to Vietnam. His point was that in war it is not possible to be "a little bit pregnant;" that to commit any ground troops at all meant, in the end, to commit as many as might be needed to ensure the security of those already committed. Again, in 1965, he took the same stand, arguing that any such commitment of troops tended to be open-ended. As for the decision early in 1965 to bomb North Vietnam's industrial and communications network, while avoiding Hanoi and other population centers, Nitze

drew on his experience as a member of the . . . Strategic Bombing Surveys. The surveys showed that in both Japan and Germany production and morale tended actually to improve while bombing was limited. Production declined and morale began to disintegrate only after the really brutal—and morally repugnant—bombing of population centers began.¹²

One question raised at the beginning of this chapter remains to be answered—To what use was put the work of the Survey? This question was preceded by an intimation that the reports of the Survey were, on the whole, ignored, at least in part because they made for something less than pleasant or inspirational reading.¹³ That, however, was only a part of the reason and not the main part. If my contention—that the reports of the Survey, especially their military applicability, have been largely ignored—is correct, then the real reason has nothing whatsoever to do with their intrinsic value. Rather, it has to do with the appearance in 1945 of nuclear weapons. Put succinctly, the atomic bombs had the effect of turning the Survey's reports into instant ancient history in the minds of most people, whether military officers or civilians.

On the very day that the first of the Survey reports was released to the public, John O'Donnell's column in the *Washington Times Herald* mentioned the Survey and how its report *might* have been important in future debates over air strategy.

What might have become a good old fashioned row now becomes an academic discussion thanks to the atom bomb. Come the next war, there will be no fleets of bombers pouring down death on civilian populations. Just one little atom bomb will do the work of a thousand blockbusters.

This attitude—that the Survey reports treated of matters not applicable to the future—was shared by officers of the highest rank. In October 1968, the present writer had the opportunity to discuss this matter with General Spaatz. He responded by relating the reaction of General MacArthur to the news, brought by Spaatz to Manila on 1 August 1945, that an atomic weapon had been built and would shortly be employed. Upon explaining the weapon's apparent capabilities to MacArthur, Spaatz went on, "General MacArthur said, 'Well, this changes warfare!'" Speaking then to his own feelings in the immediate postwar years, General Spaatz made it clear that virtually all senior airmen shared MacArthur's initial reaction and, as a consequence, lost interest almost immediately in the detailed findings of the Strategic Bombing Survey.

In one sense both the columnist and the generals were correct; the atomic bombs did change at least the parameters within which air warfare has since been conducted. Their assumption that great fleets of bombers dropping conventional weapons on industrial and population centers had become a thing of the past was an assumption that held valid for more than a quarter century. (It is still too early to speculate seriously on the significance of Operation LINEBACKER II, over Hanoi in December of 1972, as it may relate to the future of air warfare.) Where the error came, however, was in the emphasis given to atomic weapons to the exclusion of all others, and in the inability—so widespread as to be pervasive—to conceive of any form of future warfare in which aircraft armed with conventional weapons would attack targets and structures not unlike those attacked during World War II. The result of this error—a hard word and owing its force altogether to hindsight—was that a number of lessons were forgotten and had to be relearned in Korea and Vietnam. But then this is one of the central themes (ironies?) of the history of military affairs—what is remembered from the previous war usually turns out to be irrelevant in the next, what is forgotten or ignored costs lives and treasure.

For all this, the Survey reports were not entirely ignored, at least among academics and those interested in special topics on which the reports provided useful data. In the years following the war, a number of books appeared that relied heavily on information gathered by the Survey. Among them were a number of studies of a highly specialized nature, of which some of the better known are: Irving L. Janis, *Air War and Emotional Stress: Psychological*

Studies of Bombing and Civilian Defense; ¹⁴ Fred Charles Iklé, *The Social Impact of Bomb Destruction*; ¹⁵ Alexander H. Leighton, *Human Relations in a Changing World: Observations on the Use of the Social Sciences*; ¹⁶ Burton H. Klein, *Germany's Economic Preparations for War*; ¹⁷ Alan S. Milward, *The German Economy at War*; ¹⁸ Jerome B. Cohen, *Japan's Economy in War and Reconstruction*; ¹⁹ and Horatio Bond, ed., *Fire and the Air War*. ²⁰ Containing perhaps the most thorough analysis of the internal consistency of the Survey reports is *Impact of Air Attack in World War II: Selected Data for Civil Defense Planning*, a nine-part report prepared for the Federal Civil Defense Administration in 1953 by the Stanford Research Institute in cooperation with the Institute of Research, Lehigh University. For this study, the entire USSBS file at the National Archives was made available; the *Final Report* in the series analyzes the Survey's source materials and groups them into categories as to "most satisfactory," "least satisfactory," etc. All general statements are accompanied by specific examples and page references to the Survey reports in question.

As mentioned earlier, the Survey reports have proved especially useful to historians of the war, whether writing on air topics specifically or preparing general histories. To be sure, the use made of the reports by historians has been uneven at best, owing in part to the great bulk of the full *corpus* of reports and in part to their occasional inconsistencies. Also contributing to what I have called the unevenness of their use by historians and other writers has been a tendency shown by some to use selected parts of the reports to prove a point already decided upon. Some examples of such use are described and commented upon in the General Introduction to *The United States Strategic Bombing Survey*, edited in ten volumes by David MacIsaac (New York: Garland Publishing, Inc., 1976).

In the formulation of air strategy in the years since the war, the one area in which one would expect the Survey's findings to have been most useful, the reports have had little discernible impact. For a few years, while the numbers of nuclear weapons remained small, occasional recourse was made to the Survey reports by those charged

with selecting targets for a possible future war. By the 1950s, however, the increasing numbers and destructive power of weapons becoming available led to a general feeling among target planners that precision in the identification of discrete targets was of less concern than assured delivery of a weapon in the general vicinity of a target, as often as not an entire city. Later, during the bombing debates of the Vietnam era, the distortions of the Survey's principal findings by defenders and critics alike served to frustrate the rediscovered relevance of the Survey reports. These matters and others, including the possibility that new technology may once again make possible precise targeting against interlocking elements of an enemy economic system, are thoughtfully examined in John A. Lauder's "Lessons of the Strategic Bombing Survey for Contemporary Defense Policy," *Orbis*, 18, 3 (Fall 1974), pp. 770-90.

And yet in one respect, surely, the directors of the Survey were successful: they wrote the Domesday Book on strategic air warfare in World War II. Perhaps it is not too much to hope that future historians using those reports will find in these pages the answers to some questions that might otherwise have puzzled them.

Notes to Pages 1-4

NOTES

CHAPTER ONE

1. After Princeton he joined his father's business, later named Franklin D'Olier and Company, Inc., serving as president and treasurer until 1926. In addition to rising to the top of the Prudential Company, he was a director of five other corporations: The Pennsylvania Railroad, National Biscuit Company, General Refractories Company, the Morristown Trust Company, and the Howard Savings Institution of Newark.

2. "There was, in short, a general belief among the higher authorities assembled at Quebec [the OCTAGON Conference, September 1944] that German surrender could come within a matter of weeks or even days." See the discussion of this point in Robert E. Sherwood, *Roosevelt and Hopkins: An Intimate History* (New York: Harper & Brothers, 1950), pp. 817-818. For evidence that such optimism was shared in places closer to the actual battle, see Forrest C. Pogue, *The Supreme Command* (Washington: Office of the Chief of Military History, 1954), pp. 244-45, 307-10.

3. Born in Vienna of American parents, 19 September 1895; A.B., Williams, 1917; combat pilot with the Army Air Service in World War I; vice-president of Viotor Common & Company, Buffalo, New York, 1920-1933; partner in Laurence M. Marks & Company, New York City, 1933-1941.

4. A copy of General Arnold's letter is reproduced in Beveridge, Vol. 2, frames 974-75.

5. A copy of the President's letter is reproduced in Beveridge, Vol. 2, frame 973.

6. The remainder of this chapter, intended to provide a general background for the lay reader, is necessarily very selective and brings to mind a sentence from Vannevar Bush's *Modern Arms and Free Men*: "We examine in order to see trends, and shall omit much."

7. Actually, the first American bombing mission into Axis-occupied Europe

occurred on 12 June 1942 when twelve B-24s took off from Fayid, Egypt, to attack the oil refineries around Ploesti, Rumania. Craven and Cate, S 341-42; 2, 9-13. A detailed account of this extraordinary adventure is contained in the opening pages of James Dugan and Carroll Stewart, *Ploesti: The Great Ground-Air Battle of 1 August 1943* (New York: Random House, 1962).

8. New York, Macmillan, 1908. Though taking second place to none in imaginative fancy, Wells had many precursors. The title of Air Marshal Sir John Slessor's memoirs was taken from Tennyson's lines in "Locksley Hall" (1842):

"Heard the heavens fill with shouting, and there rained a ghastly Dew

From the nations' airy navies grappling in the central blue."

And Gray's "Luna Habitabilis" (1737) feared:

"The time will come, when thou shalt lift thine eyes

To watch a long-drawn battle in the skies,

While aged peasants, too amazed for words,

Stare at the flying fleets of wond'rous birds."

For "The Idea of Flight in the Middle Ages," see Chapter I of M.J. Bernard Davy's *Air Power and Civilization* (London: George Allen & Unwin, Ltd., 1941), or Beril Becker's *Dreams and Realities of the Conquest of the Skies* (New York: Atheneum, 1967).

9. An evaluation unlikely to inspire universal assent, yet one thought valid by the present writer. On the level of the spectacular, there is little debate; on the level of increasing importance, one must consider *all* aspects of aviation and such effects on armies as ordering troop movements at night to avoid observation by enemy airplanes; largely unessential implies a judgment that the course of the war *as a whole* was not affected one way or the other.

10. The definitive account of the German bombing raids against England is Major (USAF) Raymond H. Fredette's *The Sky on Fire* (New York: Holt, Rinehart, and Winston, 1966). The basic history of British military aviation during the war is W. Raleigh and H. A. Jones, *The War in the Air*, 6 vols. (Oxford: The Clarendon Press, 1922-37); for the operations of the Independent Force, see 6, pp. 118-74, and Alan Morris, *First of the Many: The Story of the Independent Force, RAF* (London: Jarrolds, 1968). The best book on American aviation in World War I is I. B. Holley, Jr., *Ideas and Weapons: Exploitation of the Aerial Weapon by the United States in World War I* (Yale University Press, 1953); supplement Holley with James J. Hudson, *Hostile Skies: A Combat History of the American Air Service in World War I* (Syracuse University Press, 1968). A recent general account is Aaron Norman, *The Great Air War* (New York: Macmillan, 1968). A valuable bibliography for the period 1899 to 1918 is contained in the footnotes to Chapters 2, 3, and 4 of George H. Quester, *Deterrence Before Hiroshima* (New York: John Wiley & Sons, Inc., 1966), an otherwise unremarkable book.

11. For a short account of the background and significance of the Smuts Memorandum, see Noble Frankland, *The Bombing Offensive Against Germany* (London: Faber and Faber, 1965), pp. 21-46. The text of the memorandum is in H. A. Jones, *The War in the Air*, Volume of Appendices, pp. 8-14. For evidence that Smuts was not the first to suggest an independent and separate air service, see Fredette, *The Sky on Fire*, pp. 83, 112-113.

12. Common usage at the present time identifies these four roles as follows: reconnaissance, tactical, strategic, and air defense.

13. The best book on Mitchell is Colonel (then Major, USAF) Alfred F. Hurley's *Billy Mitchell: Crusader for Air Power* (New York: Franklin Watts, 1964; new edition, Indiana University Press, 1975).

14. Hereafter, and with apologies to Liddell Hart, without quotation marks. For the views of a critic on the origin of the term strategic bombing, see Kent Roberts Greenfield, *American Strategy in World War II: A Reconsideration* (Baltimore: The Johns Hopkins Press, 1963), p. 88. Events in Vietnam only further confounded the semantic problem, B-52s (strategic bombers) flying "tactical" missions south of the DMZ and F-105s (tactical fighter-bombers) having flown against "strategic" targets in North Vietnam. For some observations on the "vocabulary from which on the basis of observed usage the grammar of air power may eventually be compiled," see Noble Frankland, *The Bombing Offensive Against Germany*, pp. 16-17.

15. In 1926 Congress advanced the status of the Army's air arm from that of a *Service* to that of a *Corps*. The Tactical School grew in size and five years later moved to new quarters at Maxwell Field near Montgomery, Alabama.

16. Then so called. Today the term "fighter aircraft" is more common, but tends to disguise the essential differences required by varying missions, *e.g.*, defensive fighter or interceptor, tactical support fighter-bomber, and escort fighter.

17. In a conceptual sense the theory was well established as early as 1934.

18. For some of the difficulties to be encountered in any attempt to unravel the threads of theoretical development at ACTS, see the remarks of Major (USAF) Perry M. Smith in his article, "Douhet and Mitchell: Some Reappraisals," *Air University Review*, 18, 6 (Sep-Oct 1967), pp. 97-101.

19. English translations by Dino Ferrari (New York: Coward-McCann, 1942) and Sheila Fischer (Rome: Revista Aeronautica, 1958). The 1921 version modified some of Douhet's earlier views. The best short introduction to Douhet is Bernard Brodie, *Strategy in the Missile Age* (Princeton University Press, 1965; c. 1959 by the RAND Corporation), Chapter 3, "The Heritage of Douhet."

20. See Raymond R. Flugel, "United States Air Power Doctrine: A Study of the Influence of William Mitchell and Giulio Douhet at the Air Corps Tactical School, 1921-1935" (unpublished Ph.D. dissertation, University of Oklahoma, 1965). Also important are: Frank J. Cappelluti, "The Life and Thought of Giulio Douhet"

(unpublished Ph.D. dissertation, Rutgers University, 1967); and J. L. Boone Atkinson, "Italian Influence on the Origins of the American Concept of Strategic Bombardment," *Air Power Historian*, 4, 3 (July 1957), pp. 141-49.

21. In an interview at the USAF Academy, Colorado, in September 1968, General (USAF, Ret.) Carl A. Spaatz concurred in this view.

22. See the following: Robert T. Finney, *History of the Air Corps Tactical School, 1920-1940* (Maxwell AFB, Alabama: USAF Historical Study No. 100, 1955); Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm, 1917-1941* (Maxwell AFB, Alabama: USAF Historical Study No. 59, 1955); James L. Cate, "Development of Air Doctrine, 1917-1941," *Air University Quarterly Review*, 1 (Winter 1947), pp. 11-22; Craven and Cate, Vol. 1, Chapter 2, "The Army Air Arm Between Two Wars, 1919-1939;" and Chapter 3 of Major (USAF) Perry M. Smith, "Warfare Planning for Postwar Contingencies: The Army Air Force Example, 1943-1945" (unpublished Ph.D. dissertation, Columbia, 1967). Also valuable is Major General (USAF, Ret.) Haywood S. Hansell, Jr., "American Air Power in World War II," (an unpublished, book-length (467 pp.) manuscript, in the Hansell Collection, USAF Academy Library), Chapter 2, pp. 10-18, 24-26. General Hansell was at the Tactical School, first as student and then as instructor, from 1933 to 1938.

23. For aircraft development during this period see Robert W. Krauskopf, "The Army and the Strategic Bomber, 1930-1939," *Military Affairs*, 22 (Summer 1958), pp. 83-94 and Colonel George V. Fagan *et al.*, "The Strategic Bomber," *Air University Quarterly Review*, 8, 1 (Summer 1955), pp. 89-137. The latter article is illustrated and gives brief histories of the Boeing B-17 "Flying Fortress," the Consolidated-Vultee B-24 "Liberator," and the Boeing B-29 "Superfortress"—the three United States strategic bombers in World War II. A chart on pages 134-135 gives for each aircraft: its power plant type, number, and horsepower; maximum speed; service ceiling; maximum range; dimensions; gross weight; armament; and standard crew composition.

24. "Notes for a Lecture on the Development of the U.S. Concept of Bombardment Operations," Feb 51, in the Hansell Collection.

25. See, for example, Mark S. Watson, *Chief of Staff: Pre-war Plans and Programs* (Washington: Historical Division, Department of the Army, 1950), pp. 44-47, 100-01, 126-47, 278-98, 408-10; Sherwood, *Roosevelt and Hopkins*, p. 564; Forrest C. Pogue, *George C. Marshall: Ordeal and Hope, 1939-1942* (New York: The Viking Press, 1966), pp. 48-50, 64-70, 202-03, 290-92. In an interview at the USAF Academy on 7 June 1965, Major General (USAF, Ret.) Haywood S. Hansell, Jr., a principal architect of AWPD-1 (below), stated categorically that "General Marshall was the real founder of American air power. He could have stopped AWPD-1 cold, but he didn't."

26. Ltr, General (USAF, Ret.) C. P. Cabell to the author, 2 Apr 69. General Cabell's authority for making such a statement will become clear in pages that follow.

For the working relationship between Arnold and Marshall, see Pogue, *Marshall, 1939-1942*, pp. 84-87.

27. See the report by Sir R. Lindsay of a conversation with the President, 19Sep38, in *Documents on British Foreign Policy, 1919-1939*, Third Series, Vol. 7 (London: H.M.S.O., 1954), pp. 627-29, esp. para. 12.

28. "The word from the top" filtered down not only from General Arnold's office; Harry Hopkins on a number of occasions provided an even more direct route. Interview with General Hansell, 7June65.

29. On AWPD-1, see the history of the plan by one of its authors, Major General (USAF, Ret.) Haywood S. Hansell, Jr., *The Air Plan that Defeated Hitler* (Atlanta, Georgia: Higgins-McArthur/Longino & Porter, 1972). For a capsule account, Craven and Cate, 1, 131-32, 145-50; for AWPD-1 in the context of overall War Department planning, Ray S. Cline, *Washington Command Post: The Operations Division* (Washington: Office of the Chief of Military History, 1951), pp. 60-61.

30. See Craven and Cate, Vol. 1, Chapter 17, "Establishment of the Eighth Air Force in the United Kingdom."

31. Webster and Frankland, Vol. 1, is indispensable on all matters pertaining to RAF Bomber Command. For the best short treatment, see the opening chapter of Martin Middlebrook's *The Nuremberg Raid* (New York: William Morrow, 1974), which, despite the limitations implied by its title, is the best single-volume account of Bomber Command yet to appear.

32. This problem continued for some time. "I cannot state too strongly the importance of training for this Theater in the United States. This is a hell of a poor place to train. If the weather permits flying we go on an operational mission. If it doesn't, you can't train anyway. That certainly is learning the hard way." Ltr, Brigadier General Haywood S. Hansell, Jr., commander, First Bombardment Wing, to Major General Muir S. Fairchild, 11Feb43, in Hansell Collection.

33. See Craven and Cate, 1, Chapter 9, "The Casablanca Directive." The last sentence of the quotation, stating specifically that the purpose of the offensive was to make possible an invasion, is not quoted in Craven and Cate and was apparently added to the statement sometime after April 1943, for reasons that are obscure at best (Ltr, Major General Haywood S. Hansell, Jr., to the author, 24Aug75). The version in Webster and Frankland, 4, 273, includes the sentence in question.

34. See Craven and Cate, 2, Chapter 8, "The War Against the Sub Pens."

35. Craven and Cate, 2, 317, 322.

36. Reproduced in full in Webster and Frankland, 4, 273-83. Its full title was "Combined Bomber Offensive Plan (Operation POINTBLANK)."

37. The COA and Advisory Council are treated in Chapter 2.

38. Although looked upon by some airmen as "diversionary" targets, "the submarine facilities were selected without coercion, essentially as being good targets for on-the-job training and for the testing of tactics, while at the same time

performing a function that would please the Navy Members of the Combined Chiefs of Staff and so predispose them to favor the plan. . . . The submarine targets were consistent with our recognition that preservation of the U. K. as a base for all future attacks against Germany was an essential. The submarines also fitted in with Arnold's *continuing* battle in Washington to prevent the diversion of the heavies to Pacific patrol duties. We planners of the C. B. O. were very conscious of this Navy position." Ltr, General (USAF, Ret.) C. P. Cabell to the author, 2Apr69.

39. Thought to be concentrated in a few plants and absolutely vital to the aircraft industry.

40. Para. 3 (a), C.B.O. Plan (italics in original).

41. For the preceding two paragraphs, see Craven and Cate, 2, Chapter 20, "Pointblank."

42. See Craven and Cate, 2, Chapter 21, Autumn Crisis," and 3, Chapter 1, "Winter Bombing."

43. Webster and Frankland, 2, 190-211.

44. Bernard L. Boylan, *Development of the Long-range Escort Fighter* (Maxwell AFB, Alabama: USAF Historical Study #136, 1955); William R. Emerson, *Operation Pointblank: A Tale of Bombers and Fighters* (USAF Academy: Harmon Memorial Lecture in Military History #4, 1962).

45. The fighter pilots had another reason for wanting to get further away from the bombers. "My pilots report that they are still being fired on by Fortresses. This does not make the fighters' task easy, particularly when they are at the same time being heavily engaged by the Hun. I hope, therefore, that something can be done to improve the standard of aircraft recognition among bomber crews." Ltr, Air Vice-Marshal H. W. L. Saunders, air officer commanding No. 11 Group (RAF) to Brigadier General Newton Longfellow, commander, Eighth Bomber Command, 15May43, in Hansell Collection.

46. See Craven and Cate, 3, Chapter 2, "Big Week."

47. Participants in the great debate revolving around the Oil Plan v. the Rail Plan (the latter also known variously as the Transportation Plan, the Tedder Plan, the Zuckerman Plan, the Leigh-Mallory Plan) have convinced me that no matter was more fiercely contested in the field of air strategy than this one. Accounts left by participants on either side of the issue have colored virtually all subsequent accounts. With the notable exception of Webster and Frankland (3, 22-24), for example, most British accounts fail to treat General Spaatz's position either adequately or fairly. Two prominent examples of uninformed accounts may be found in: John Ehrman, *Grand Strategy*, Vol. 5 (London: H. M. S. O., 1956), pp. 286-304; and R. W. Thompson, *The Price of Victory* (London: Constable, 1960), pp. 123-38. By the same token, it is probably fair to assume that General Spaatz was more concerned with the number of German aircraft that might show up on D-Day than he was with the

number of German railway trains that might put in an appearance. In a letter to the author (2Jul69), General (USAF, Ret.) C. P. Cabell recalled that "the oil attacks, as contrasted to the rail attacks, would serve *two* purposes: (1) Germany proper would be on the receiving end, and (2) the oil attacks would affect not only the German Air Force, but the economy as a whole and its ability to support the German surface forces." When I pointed out to General Cabell that this argument, if read in a particular light, could be taken to parallel Air Marshal Harris's idea that the bombers simply should not be diverted from targets in Germany, for *any* reason, I almost lost a friend.

48. The author is indebted to the late General (USAF, Ret.) C. P. Cabell for help with the preceding paragraphs. As senior member of General Arnold's Advisory Council, General (then Colonel) Cabell had helped write the C.B.O. Plan. Later, from December 1943 to February 1944, he commanded the Forty-fifth Heavy Bombardment Wing. From February to July 1944 he was on the staff at USSTAF where he became Director of Plans on 1 April 1944.

NOTES

CHAPTER TWO

1. Periodic inspection and evaluation of particular military functions were outgrowths of the modern staff system as established most notably in Prussia. But the practice existed even earlier and it can be argued that the vaunted Prussian staff system itself stemmed in part from the special Commission created by Frederick William III in July 1807, to inquire into the causes of the defeat at Jena. See Gordon A. Craig, *The Politics of the Prussian Army, 1640-1945* (Oxford: The Clarendon Press, 1955), pp. 38-39.

2. Hansell, *Air Plan that Defeated Hitler*, Chapter 3. Guido R. Perera, *Washington and War Years* [Vol. 2 of *Leaves from My Book of Life*] (Boston: Privately Printed, 1975), p. 67. The clandestine approach to gathering data re possible targets seemed to be required at least in part because the Intelligence Division of the War Department General Staff "did not recognize the validity of conducting air offensives against industrial structures and did not agree that the compilation and analysis of economic information constituted a proper military activity." Hansell, "American Air Power in World War II," Chapter 4, pp. 8-9, in the Hansell Collection.

3. "History of the Organization and Operations of the Committee of Operations Analysts," pp. 3-4. Described in the bibliography, this manuscript is referred to hereafter as COA History.

4. For OR (Operational Research, British usage) and OA (Operations Analysis, U.S. usage) in World War II, see: J.B.S. Haldane, *Science in Peace and War* (London: Lawrence & Wishart Ltd., 1940), Chap. 7; Anonymous, *Science in War* (London: Allen Lane, Penguin Special, 1941), for the background of which see Sir Solly Zuckerman, *Scientists and War* (London: Hamish Hamilton, 1966), pp. 148-49; Air Ministry, Air Publication 3368, *The Origins and Development of Operational Research in the Royal Air Force* (London: H.M.S.O., 1963); J. G. Crowther and

R. Whiddington, *Science at War* (New York: Philosophical Library, 1948); Leroy A. Brothers, ed., *Operations Analysis in World War II: United States Army Air Forces* (Philadelphia: Stephenson-Brothers, 1948); W. B. Leach, "Operations Analysis in World War II," 1948, unpublished manuscript in Air Force Archives, 143.504; "Operations Analysis, Hq. Army Air Forces, Dec42-Jul47," n.d., unpublished manuscript, Hq USAF, Office of Air Force History; P. M. S. Blackett, *Studies of War* (New York: Hill and Wang, 1962), Chaps. 4, 8, 9; C. P. Snow, *Science and Government* (Harvard University Press, 1961).

5. Formerly professor of law, Harvard; born 6 January 1900, Boston; Harvard A.B., 1921; L.L.B., 1924; secretary to Justice Oliver Wendell Holmes, 1924-1925; practicing attorney in Boston, 1925-1930; joined Harvard Law Faculty as instructor, 1929, assistant professor, 1930; professor, 1931; served as private, USA, 1918; commissioned as major, June 1942; promoted lieutenant colonel, January 1943; colonel, August 1944.

6. Formerly an attorney with the firm of Hutchins and Wheeler, Boston, 1927-1941; born at Brussels, 21 April 1902; Harvard A.B., 1924; L.L.B., 1927.

7. For the COA, see Craven and Cate, 2, 353-67; Perera, *Washington and War Years*, pp. 69-118; COA History, *op. cit.*

8. Chief among whom were: from Management Control—Colonels Gates, Perera, and Leach; from AC/AS, Intelligence—its chief, Colonel Edgar P. Sorenson, and the chief of its Target Information Section, Colonel Malcolm W. Moss; from the Military Intelligence Division (G-2), WDGS—Colonel Thomas G. Lanphier.

9. Economist and student of military affairs from the Institute for Advanced Study at Princeton, New Jersey; invited to participate by Colonel Moss.

10. Formerly a professor of economics at Harvard; came to Washington to organize the Research and Analysis Branch of OSS; a member of the Joint Intelligence Committee; added at the suggestion of Mr. Earle.

11. Attorney; senior partner in the New York firm of Root, Clark, Buckner, and Ballentine; a director of the American Telephone and Telegraph Company; first approached by Colonel Leach, who had already borrowed Mr. John M. Harlan (in 1969 an associate justice of the Supreme Court) from Root's firm to organize and head up the Operations Analysis Section, Eighth Air Force.

12. Attorney; had served as an assistant to the solicitor general on anti-trust matters; left Department of Justice to become chief of the Enemy Branch, Board of Economic Warfare; added at the suggestion of Mr. Earle.

13. Banker; senior officer of J. P. Morgan and Company of New York; added in January of 1943 at the suggestion of Mr. Root and through the personal intervention of General Arnold; like Root, a long-time personal friend of Secretary of War Stimson.

14. From the Washington office of the British Ministry of Economic Warfare;

formerly professor of political economy, University of London, and director of Britain's National Institute for Economic and Social Research; added at the suggestion of Mr. Earle.

15. The COA's report, in the form of a long "Memorandum for Lt. General Arnold," was entitled "Report of Committee of Operations Analysts with respect to Economic Targets within the Western Axis." The report contributed substantially to the C.B.O. Plan for Operation POINTBLANK. A copy of the report is reproduced in Beveridge, Vol. 2, frames 737-754.

16. COA History, pp. 98-100.

17. For Kuter's background, see Pogue, *Marshall, 1939-42*, pp. 85-86, 291, 294; and Perry M. Smith, *The Air Force Plans for Peace* (Baltimore: The Johns Hopkins Press, 1970).

18. COA History, p. 100.

19. In civilian life an attorney with the firm of McAfee, Grossman, Haming, and Newcomer of Cleveland, 1930-1942; born in 1907; Western Reserve A.B., 1928; L.L.B., 1930; commissioned first lieutenant, 11 May 1942, promoted captain in June of 1943 and major in January 1944; prior to assignment to AC/AS, Intelligence, a member of the staff of the Air Intelligence School at Harrisburg, Pennsylvania. By 1944 the Target Information Section had been renamed and Colbert's precise duty title was Chief, European Section, Target and Damage Evaluation Branch, Analysis Division, AC/AS, Intelligence.

20. Colbert's original memorandum of 27Mar44 is reproduced in Beveridge, Vol. 2, frames 755-56. A copy of the revised version, General White to General Arnold, 30Mar44, follows on frames 757-58. The changes were few, but did include dropping the reference to the role of air power in "policing the postwar world."

21. In February of 1942, as the Air Staff grew rapidly, General Arnold felt the need for a small, cohesive group of officers to act as "ministers without portfolio" on his personal behalf. They could help him analyze the increasing flood of problems that did not fall into readily identifiable slots. He wanted "someone to do his blue-sky thinking." The first two officers so to serve him were Lieutenant Colonels C. P. Cabell and Lauris Norstad.

22. Interview with General (USAF, Ret.) C. P. Cabell, 9May1968.

23. Ltr, General (USAF, Ret.) C. P. Cabell to the author, 2Apr69. Cf. General Arnold's comments in his memoirs: "Another kind of statistics concerned Bob Lovett and me at this time. As soon as it was possible to get it, we needed an accurate, unbiased analysis of the effects of our bombing on the enemy's economy, on his military operations, and on the termination of hostilities. We both knew that following World War I everybody claimed to have won it. Finally, to stop further arguments, people used to say the Great War had been won by the chaplains. What Lovett and I wanted to do was create an impartial agency which would have at its

disposal all the data necessary for a frank report to the President." *Global Mission* (New York: Harper & Brothers, 1949), p. 490.

24. A 1925 graduate of the Military Academy, Cabell had originally been commissioned in the Field Artillery. He switched over to the Air Corps in 1930, served in the Canal Zone and Texas, graduated from ACTS in 1939, from the Army Command and General Staff School in 1940, and served with the Experimental Engineering Section at Wright Field until 1941, when he was transferred to Washington. He was a lieutenant colonel serving as Chief, Technical Coordination Branch, office of the Chief of the Air Corps, when selected for the Advisory Council.

25. Ames was born at Wayland, Massachusetts, 20 April 1911, son of a former secretary of Harvard Law School, and grandson (Ames side) of a former dean of Harvard Law and (Abbott side) a former dean of Stanford Law School; A.B., *magna cum laude*, Harvard, 1932; L.L.B., 1936; from 1936 to early 1942, when commissioned in the AAF, Ames practiced law with the prestigious Boston firm of Ropes, Gray, Best, Coolidge & Rugg.

26. A 1928 graduate of the Military Academy, Anderson was commissioned in the Cavalry, but switched over to the Air Corps in 1929 and served in bombardment aviation continuously from 1931, graduating from ACTS in 1940.

27. The EAC was a U.S.-British-Russian committee, established in December 1943, which met in London and considered proposals relating to the termination of hostilities, occupation of conquered territories, etc. See *Federal Records of World War II*, Vol. 1, pp. 1059-60.

28. Reproduced in Beveridge, Vol. 2, frames 757-65, are: Original memo from Ames to Anderson, "Proposed Committee to Survey Results of CBO," 28Mar44; a note from Anderson to Ames, 1Apr44, asking the latter to prepare a memo from Anderson to Spaatz; a memo, 3 Apr44, Anderson to Spaatz; and the letter, 5Apr44, from Spaatz to "Dear Hap."

NOTES

CHAPTER THREE

1. "If you approve the above I believe that the . . . head of this committee might be somebody of the caliber of Patterson of the Baltimore Sun, or Sulzberger of the New York Times, or the president of some well-recognized university." Beveridge, Vol. 2, frame 765.

2. Ltr, Anderson to Fairchild, 11Apr44, reproduced in Beveridge, Vol. 2, frame 766.

3. EOU/EWD, housed in the U.S. Embassy in London and staffed primarily by personnel from FEA and OSS, was chiefly engaged in preparing target information on enemy objectives in Europe. Its sources of information included those of the "cloak and dagger" variety described in Patrick Howarth, ed., *Special Operations* (London: Routledge and Kegan Paul, 1955); cf. *Federal Records of World War II*, Vol. 1, pp. 743-45.

4. See Irvin Stewart, *Organizing Scientific Research for War* (Boston: Little, Brown and Company, 1948), pp. 169-78.

5. R.E. 8 was the Research and Experiments Department No. 8, Ministry of Home Security. Established in 1940, its first major task had been an attempt to measure the effects of the German air attacks on England, 1940-41. The knowledge thereby acquired led the Air Ministry to seek its assistance in predicting bomb damage effects. By 1944 it had come under the direction of the Operations Branch of the Air Ministry, its personnel including a number of Americans. Webster and Frankland, 1, 267-68, 473-74, 486-88.

6. The early activities of Colonel Ames, as well as the identities and contributions of those assisting him, are summarized in Beveridge, Vol. 1, pp. 6-20. For examples of the suggestions provided by other agencies, see: Memo, 6Apr44, "Post V-Day Investigation of the Effects of the Combined Bomber Offensive," by Captain Charles P.

Kindelberger of EOU/EWD, formerly with OSS and a member of the aircraft subcommittee of the COA, Vol. 2, frames 776-80; Memo, 11Apr44, to Ames from Colonel John M. Harlan, Chief, Operations Research Section, 8AF, Vol. 2, frames 781-83; Memo, 5May44, "Survey of Results of Bomber Offensive," prepared by Ames with assistance of Bruce Hopper (formerly associate professor of government, Harvard) and Captain Stephen H. Stackpole (formerly an assistant dean at Harvard), both of USSTAF's Historical Section, Vol. 2, frames 784-88; and, for OSRD proposals, Vol. 2, frames 805-10.

7. It was only natural that each agency would have a few special interests to conserve, especially as pertained to postwar exploitation of German documents. Not only were Parkinson's Laws relevant, but there was also a natural fear that the Air Force people might fail to highlight certain contributions of the other agencies. These worries are documented in the memoranda cited in the note immediately above.

8. On this crucial point the written record, as will become clear, is absolutely untainted. In addition to the letter of 5 April, see the following note.

9. Ltr, Spaatz to Arnold, 20Apr44, to which was attached a draft of a proposed memorandum to be sent to the President by General Arnold; both reproduced in Beveridge, Vol. 2, frames 768-70. Paragraph 8 of the proposed memorandum for the President read as follows: "As I have already indicated, the Air Forces will be dependent on the results of the proposed study. For this reason, the Air Forces should take the lead in sponsoring the investigation. On the other hand, I do not propose in any way to attempt to influence the conclusions of the committee, and I believe they should be strong enough to resist any partisan influence that may be brought to bear upon them. What I want is to get at the facts, and if mistakes have been made in the past, I want to know about them, so that we can be even more effective in the future."

10. "Memorandum for General Knerr," (USSTAF Deputy Commander for Administration), 22Apr44, reproduced in Beveridge, Vol. 2, frame 773.

11. See Noble Frankland, *The Bombing Offensive Against Germany*, Chapter 2, and C. P. Snow's already classic *Science and Government*. For the complete account, Webster and Frankland, Vol. 1, is indispensable.

12. Spaatz Collection, Box 15, folder for May 1944; also reproduced in Beveridge, Vol. 2, frame 767.

13. Copies in Spaatz Collection, Box 15, folder for May 1944, and Beveridge, Vol. 2, frames 774-75.

14. "Minutes of a Meeting held in the Air Council Room, Whitehall, at 1445 hours, 26 May 1944 . . .," copy in Beveridge, Vol. 2, frames 801-03 (italics in original).

15. For the formal statement of General Cabell at the meeting of 26May44 see NA, 243, 1, 2, 001, or the copy reproduced in Beveridge, Vol. 2, frame 800.

16. Webster and Frankland, 4, 56-58.

17. Ltr, 22Apr44, General Anderson to General Kuter, copy in Spaatz Collection, Box 15, folder for May 1944; Kuter's reply of 15 May, copy in NA, 243, 1, 53, 314.7; ltr, 27May44, Anderson to Kuter, copy in NA, 243, 1, 66, 322; and ltrs of 3 and 5 June, Arnold to Spaatz, in Spaatz Collection, Box 15, folder for June 1944.

18. For a short account of the BBSU see Webster and Frankland, 4, 40-58. The RAF had even greater difficulties with Mr. Churchill than with the Americans, the prime minister looking on the whole idea of a bombing survey as "a sterile task." For details of further meetings and maneuverings in the futile quest for a combined survey, see: Memo, 30May44, "Organization of Machinery for Cooperation with British and Soviets in Survey of Results of Bomber Offensive," Beveridge, Vol. 2, frames 828-30; correspondence of June 44 between Bufton and Cabell, in NA, 243, 1, 71, 334; "Minutes of a Meeting held in the Upper War Room, Air Ministry, Whitehall, at 1015, 17 June 1944," Beveridge, Vol. 2, frames 814-16; minutes of meeting of 6 July, this time including a Soviet representative, in NA, 243, 1, 71, 334 (these minutes attached to a letter of 10 July from Cabell to Ambassador Winant). In the words of the contemporary historian (Beveridge, Vol. 1, p. 28), "It proved, however, that this microcosm of possible international cooperation was a little ahead of the realities."

19. In a memo of 18Apr44; Beveridge, Vol. 1, p. 35.

20. Memo sent out over the signature of Major General Barney M. Giles, Chief of the Air Staff, 28Apr44, copy in Beveridge, Vol. 2, frames 796-99; the twelve addressees are identified in Beveridge, Vol. 1, p. 22; a complete set of the replies is in the Spaatz Collection, Box 225 and in NA, 243, 1, 76, 381. Among the comments was a remarkably prophetic observation by the AC/AS, Personnel: "Although a survey of the results of the CBO appears highly desirable with respect to future air policy, this office questions its advisability with respect to future offensives in the Japanese theater [since] the full weight of the Air Forces will be thrown against Japan regardless of the *relative value* of strategical bombing."

21. Beveridge, Vol. 2, frames 798-99.

22. "We came, we listened, and we were conquered." General Albert C. Wedemeyer, *Wedemeyer Reports!* (New York: Henry Holt and Company, 1958), p. 192; cf. General Laurence S. Kuter, *Airman at Yalta* (Boston: Little, Brown and Company, 1955).

23. This memo to General Giles was in the form of a covering letter attached to the 28 April memo to the Air Staff prepared for Giles's signature; see Beveridge, Vol. 2, frames 796-97. General Handy's views were expressed in a memo to Kuter, 21Apr44, copy in Spaatz Collection, Box 225.

24. See Vincent Davis, *Postwar Defense Policy and the U.S. Navy, 1943-1946* (Chapel Hill: University of North Carolina Press, 1966), a book that must be used with some care as explained at the end of Chapter 6 in the present volume. Also valuable, although often outlandishly prejudiced against the Air Force, is Major (USA)

Lawrence J. Legere, Jr., "Unification of the Armed Forces" (unpublished Ph.D. dissertation, Harvard, 1950). Legere's study is informed by the special access granted him to the JCS files. The Air Force side of the story is the subject of Perry M. Smith's *The Air Force Plans for Peace*, *op. cit.*

25. Msg, WAR 41558, copy in Spaatz Collection, Box 225.

26. Ltr, Arnold to Spaatz (signed for Arnold by the Acting Chief of the Air Staff), 5Jun44, in Spaatz Collection, Box 15, folder for June 1944. Conant, president of Harvard University, was serving under Vannevar Bush (OSRD) as chairman, National Defense Research Committee (NDRC). Roberts, an associate justice of the Supreme Court since 1930, had conducted the Pearl Harbor investigation.

27. Ltr, Arnold to Spaatz, 3Jun44, in Spaatz Collection, Box 15, folder for June 1944. In addition to Conant, the following were suggested as potential nominees: Mr. Louis H. Brown, president of Johns-Manville Corporation and former president, National Association of Manufacturers; and Mr. Lewis W. Douglas, president, Mutual Life Insurance Company. The format and style of this letter are not similar to those drafted by General Kuter; its insistence on the limited scope for the survey and the importance of speed reflect AC/AS, Intelligence concerns; the questions it proposed be answered concern almost exclusively questions of target selection; one sentence reads—"Major Colbert, who has been offered to you, is familiar with our views on the scope of the survey."

28. Memo, "Survey of Results of CBO," 6Jun44, copy in NA, 243, 1, 76, 384.3. Related papers in NA, 243, 1, 53, 314.7.

29. A note at the bottom of the memo, in Arnold's hand, reads: "This was taken up and approved by General Marshall and Admiral King. I assued them that it would be coordinated with the RAF. Go ahead. H.H. Arnold." It is interesting to observe how Arnold held on to his options: nowhere in the memo is there any reference to civilian direction of the proposed survey. We can probably assume, however, that this matter was broached in conversation.

30. Referred to as "Chart B," copy in Beveridge, Vol. 2, frame 820.

31. These questions were raised in the memo by Captain Kindelberger of EOU/EWD, cited above in n. 6. Recommendations and suggestions similar to these continued to pour in throughout the summer. For a 21Jul44 proposal from EOU/EWD, see Beveridge, Vol. 2, frames 1003-07; for another of 9Aug44, see *ibid.*, frames 992-1002; for another of 29Aug44, see NA, 243, 1, 35, 300.6-D.

32. Beveridge, Vol. 1, p. 17.

33. See ltrs, Spaatz to Arnold, 13 and 17Jun44, Beveridge, Vol. 2, frames 826-27 and 831-32; also Spaatz to Major General Barney M. Giles (Arnold's deputy), 22Jun44, copy in NA, 243, 1, 71, 334.

34. Koenig was offered to USSTAF in Msg, WAR 48452, 9Jun44, the offer being accepted by USSTAF in a msg of 13 June; Spaatz Collection, Box 225. Cf. NA, 243, 1,

53, 314.7. His official assignment was to Hq, AAF, Office of Bomb Damage Analysis Project, with temporary duty in London for an indefinite period to carry out the instructions of the CG, USAAF. Formerly in command at Mariana Army Air Field in Florida, Koenig was a command pilot and had played a part in establishing the first B-17 Group at Langley Field, Virginia. Commissioned 26 November 1917, he was a 1932 graduate of ACTS and spent the opening years of the war in the Plans and Intelligence fields, first within the Air Corps and later with WDGS.

35. The scope of this task, the sources consulted, and the means applied are detailed in an 11-paragraph memo of 10Jul44 prepared for Koenig by Major (later Lieutenant Colonel) William J. McNamara; NA, 243, 1, 17, 220.3. McNamara, who was to perform yeoman service for USSBS, held an L.L.B. from St. John's (1933) and before the war had worked as a New York state trooper, a partner in a law firm, and an agent of the U.S. Secret Service. Entering active duty in April 1942, he was assigned to counter-intelligence duties with the Eighth Fighter Command from August of 1942 until assigned to the planning staff of the survey on 8Jun44; NA, 243, 1, 10, 201.35.

36. The AAF Evaluation Board for the ETO was headed by Major General Jacob E. Fickel and reported to ETOUSA on 14Jul44. The final resolution of the jurisdictional conflict is treated in the next chapter. A copy of the directive establishing the ETO Board is in Beveridge, Vol. 2, frames 821-23. The surviving records of the various Boards are in the Air Force Archives, file numbers 138.4-1, 138.4-2, 138.6, 138.6-5, and 138.7-4; cf., at the same location, USSTAF records under file numbers 519.201-19 and 519.201-28. Early correspondence aimed at resolving the conflict is in Beveridge, Vol. 2, frames 824-25 and 835-41; and NA, 243, 1, 71, 334.

37. Memo, Kuter to Arnold, 30Jun44. Kuter Papers.

38. Msg, WAR 70002, 24Jul44. Spaatz Collection, Box 225.

39. Msg, USSTAF 65492, 26Jul44. *Ibid.*

40. Msg, WAR 71626, 28Jul44. *Ibid.*

41. See a msg (drafted by Koenig) USSTAF 66484, 15Aug44, *ibid.*, and a personal letter, Koenig to Kuter, 17Aug44, in NA, 243, 1, 66, 322.

42. Ltr, Lovett to Spaatz, 3Sep44, in Spaatz Collection, Box 16. Cf. msg, WAR 87148, 26Aug44, which reads in part: "Selection of highest quality institutional group is designed not only to strengthen unbiased character of survey but also to facilitate procurement of varied specialists. . . ." Spaatz Collection, Box 225. A short treatment of Lovett's government career is in Carl W. Borklund, *Men of the Pentagon* (New York: Frederick A. Praeger, 1966), pp. 114-37; cf. Arnold, *Global Mission*, p. 490, and *Current Biography*, November 1951.

43. Summarized in Beveridge, Vol. 1, pp. 39-44, this report is reproduced in full in Beveridge, Vol. 2, frames 844-909. Several copies of the report are in NA, 243, 1, 64, 319.9.

44. The five divisions represent an expansion of "Chart A," reproduced in Figure 1. The three "units" of the "General Evaluation Section" are now designated Divisions; the "Target Analysis Section" has been translated into a Physical Damage Division, and a newly planned Division—Strategic Operations—reflects the awareness of Koenig's planners that the survey personnel would require considerable data and guidance that could be furnished only by those familiar with the planning and actual accomplishment of bombing missions.

45. Beveridge, Vol. 2, frames 849-50 (Progress Report, Part I, para. 2).

46. *Ibid.*, frame 843.

47. The following three letters are reproduced in Beveridge, Vol. 2, frames 910-19. The originals are in NA, 243, 1, 37, 300.6-GG and NA, 243, 1, 66, 332.

48. Translation: Donald Kirk David, dean, Graduate School of Business, Harvard; Karl T. Compton, president, M. I. T., and chief, Office of Field Service, OSRD; Clarence A. Dykstra, president, University of Wisconsin; Robert G. Sproul, president, University of California. "The Colonel" is Koenig. "P. D." is Physical Damage. General F. L. Anderson had returned to the U.S. to attend the September conference at Quebec (OCTAGON). The matter of Burchard's participation had become thoroughly confused, Burchard being led to think at first that he was desired as chairman rather than as physical damage specialist. In the end, Burchard declined to participate but did recommend several people in his place including the eventual director of the Physical Damage Division, Professor Harry L. Bowman of the Drexel Institute in Philadelphia. NA, 243, 1, 6, 200.3.

49. One Field Team left London on 15 September, followed by two more on 21 September.

50. Beveridge, Vol. 1, pp. 48-49. Koenig had attempted to get AAF Headquarters to give him firm answers on the question of how to proceed in the absence of a chairman, but had been unsuccessful. The "outside groups" included the AAF Evaluation Board, EOU/EWD (whose personnel had prepared the economic portion of Koenig's Progress Report), R.E. 8 (some of whose personnel had joined Koenig's experimental field teams), and the BBSU, still hopeful for cooperation of one sort or another.

51. Beveridge, Vol. 1, p. 66 and Vol. 2, frame 968.

52. In NA, 243, 1, 63, 319.7.

53. Ltrs, Donahoe to Koenig, 5 and 10Oct44, *ibid.*, and ltr, Lovett to Spaatz, 15Oct44 (in Spaatz Collection, Box 16) which reads in part: "Hap and I had a long session with Dr. Sproul in Los Angeles and we have his agreement to serve although he is still having trouble with his Board of Regents to get a release. Governor Warren of California is the Chairman of the Board and I hope that he will help us. . . ."

54. NA, 243, 1, 63, 319.7.

NOTES

CHAPTER FOUR

1. The narrative of events for 21 October is based on: (1) the account in Beveridge, Vol. 1, pp. 68-86; (2) transcript of D'Olier's remarks to an assembly of Survey members in London, 22Dec44, NA, 243, 1, 2, 001; (3) interview with Guido R. Perera, 3Mar69. The best first-person account of the Survey yet to appear is in Perera's *Washington and War Years*, *op. cit.*, pp. 119-77.

2. The essence of Arnold's personal style, as characterized by General Kuter in his *Airman at Yalta* (Boston: Little, Brown and Company, 1955), p. 32. No doubt Mr. D'Olier received Arnold's famous "stereoscope treatment" (also described by Kuter) in which unwary visitors to his office "were forced more by his contagious enthusiasm than by respectful courtesy" to examine three-dimensional photographic studies of AAF bombing effects.

3. Between August and October of 1944 the COA was gradually succeeded by the Joint Target Group (JTG), made up of representatives of AAF, Army, and Navy and attached to General Kuter's office. It was only natural that once the largely civilian COA had established a general method of approach to target selection, the professional soldiers would seek to bring this problem back within its "proper sphere." Directives establishing the JTG are in NA, 243, 1, 66, 322.

4. Born at Murfreesboro, Tennessee, 1 August 1902; A.B., Vanderbilt, 1923; L.L.B., Yale, 1925; from 1925 to 1939 with the law firm of Davis, Polk, Wardwell, Gardiner, and Reed of New York; in 1939 became a partner (later a director and vice-president) of J. P. Morgan and Company, Inc.; additionally he was a director of several corporations including Johns-Manville, American Viscose, Standard Brands, and General Motors.

5. Born at Des Moines, Iowa, 21 December 1909; A.B., Northwestern, 1930; J.D., 1933; Farm Credit Administration and Treasury Department, 1933-35; private

practice in Chicago, 1935-42; see his excellent and revelatory essay, "With AES in War and Politics," in Edward P. Doyle, ed., *As We Knew Adlai* (New York: Harper & Row, 1966).

6. Born at Amherst, Massachusetts (where his father was then professor of romance languages), 16 January 1907; A.B., Harvard, 1928. In 1929 became a cost accountant for Container Corporation of America, later in that year made a report on the German economic situation for Bacon, Whipple and Company, Chicago investment bankers, and soon thereafter joined Dillon, Read and Company of New York. A director of United Light and Power; American Light and Traction; Continental Gas and Electric; American Gas and Power; St. Lawrence Paper Mills; the Chicago, Rock Island and Pacific Railroad; and the St. Louis-San Francisco Railroad. Came to Washington in June of 1940 as an assistant to Mr. James Forrestal, then Navy under-secretary and formerly president of Dillon, Read.

7. Born at Nevada City, California, in 1888; B.S., University of California, 1909. In *Speaking Frankly* (New York: Harper & Brothers, 1947) Byrnes described him as "a New York industrialist—a quiet, unassuming man, with extraordinary knowledge of industrial processes. Throughout the war, he ably filled a number of responsible positions, refusing salary and reimbursement for expenses and avoiding publicity. He served his country well." Although the Survey continued to carry him on its rolls, his service was largely perfunctory, Mr. Byrnes keeping him fully occupied with other duties. He later described himself as "a sort of lame-duck Director" of the Survey.

8. Born at Philadelphia, 17 May 1889; B.S., Pennsylvania State College, 1911; M.S., M.I.T., 1914. After working with the American Bridge Company, he joined the M.I.T. faculty until 1926 when he transferred to Drexel Institute. As described earlier, his post was originally offered to John E. Burchard. When he refused, Colonel Koenig sought to interest Dr. H. P. Robertson, a member of the London OSRD mission. When OSRD refused to release Robertson, the Survey planners turned to Bowman who had been recommended by Burchard.

9. Born at Cheyenne, Wyoming, 5 August 1903; A.B., Michigan, 1926; Ph.D. (Psychology), Columbia, 1932; on the faculty at New York University, 1930-36; director of research for the Life Insurance Sales Research Bureau, Hartford, 1936-39; joined Department of Agriculture in 1939. On 21 October Colonel Perera called President Conant of Harvard for suggestions on who might head up the morale study. Conant referred Perera to President Leonard Carmichael of Tufts University for guidance, and Carmichael recommended Likert. While with Agriculture, Likert had directed wide-scale public opinion samplings on the question of rationing. NA, 243, 1, 20, 230.13.

10. Born at Galesburg, Illinois, 25 May 1895; B.S., Lombard College (Galesburg), 1915; B.S., M.I.T., 1918; D.Sc. (Honorary), Knox College, 1937; since 1918 the top aircraft engineer with Curtiss-Wright and since 1940 a member, in turn, of the

National Defense Council, the Office of Production Management, the Aircraft Resources Control Office; in September 1944, appointed administrator of civil aeronautics.

11. Born at Worcester, Massachusetts, 16 July 1898; A.B., Clark University, 1917; M.A., M. I. T., 1923; assistant director, Research Laboratory of Applied Chemistry, M. I. T., 1926-27; director of research, Standard Oil Company of Louisiana, 1927-29; vice-president and general manager, Hydro Engineering and Chemical Company, 1929-34; with Standard Oil since 1934.

12. The author of the COA History cited earlier was Colonel Perera. His account is almost unique in the extent to which it spells out the precise mechanics of the recruiting process. Far more normal was the approach of Major Beveridge (in the USSBS history), who went to extraordinary lengths to disguise the fact that Mr. D'Olier's was about the fifteenth name considered for the chairmanship.

13. Beveridge, Vol. 2, frames 976-77.

14. *Ibid.*, frames 978-9 for the letter to Commander, ETO; the letter to the Commander, MTO, is in the Air Force Archives, file number 519.201-28, 28Jun44-Feb45. They are practically identical.

15. Beveridge, Vol. 2, frame 813.

16. *Ibid.*, frame 980.

17. *Ibid.*, frame 841.

18. In its preliminary stages the Survey had had many names. At first it was known as the "AAF Research Unit," then as the "Strategic Bombing Effects Survey." Later, when Colonel Koenig was in Washington during September, the name "U.S. Bombing Research Mission" was given to the group. At AAF Headquarters the Survey was known as "Office, Bomb Damage Analysis Project." All this was very trying for Colonel Koenig, who complained in a letter of 30Oct44 that "there is a limit to the number of names we can go through and still have people pay attention to us." NA, 243, 1, 6, 200.3.

19. Joint memo (D'Olier and Perera), 28Oct44, "Conference with General Fairchild," NA, 243, 1, 2, 001.

20. For Stevenson's association with the group, see Ball's essay cited above, n. 5. Coblenz (later a major) stayed with the Survey in the Morale Division. Povse (later a master sergeant) became Mr. D'Olier's personal secretary. Donahoe's place in the Washington Liaison office was taken by Major (later Lieutenant Colonel) William Strickland, of whom more later.

21. Zierdt, age thirty-one, was a West Point graduate (1937), originally from Harrisburg, Pennsylvania, with a background in Ordnance. He arrived in England in April of 1944, worked for a while with Eighth Air Force, and joined Colonel Koenig in July.

22. Unlike the other Divisions of the Survey, which would examine targets by virtue

of their type (oil, aircraft, etc.) to determine total production loss, the Physical Damage Division sought to determine precise extent of damage (1) to various types of structures, and (2) by various types of weapons. Thus the post-raid physical condition of the target, and the scientific measureability of that condition, was what was important, not the production or economic effects. The preliminary work on physical damage assessment is described in Colonel Koenig's second Progress Report (covering the period 1Sep-31Oct) reproduced in Beveridge, Vol. 2, frames 922-69; see especially Appendix 2, "Criteria for Selection of Targets," frames 963-65.

23. Pincus was an FEA lawyer who was acting head of EOU/EWD. The Survey's side of the story concerning the "difficulties" in working with EWD and the latter's "increasingly unfriendly attitude" is described in a long memo, undated, Colbert to D'Olier, "Relationships with EWD," in NA, 243, 1, 42, 310.1. The EWD side is related in an eight-page memo, Pincus to D'Olier, 6Nov44, "Status of Preparation of Economic Portions of USSBS," in NA, 243, 1, 66, 322.

24. "Minutes of a Conference at WIDEWING," 8Nov44, in Spaatz Collection, Box 16.

25. Memo by Alexander, 4pp, "Working Arrangements Between EWD and the USSBS," 12Nov44, in NA, 243, 1, 42, 310.1.

26. "Joint Memorandum of Mr. Franklin D'Olier, Chairman, USSBS, and Major General Jacob E. Fickel, President, AAF Evaluation Board, ETO," 12Nov44, NA, 243, 1, 71, 334. Arnold's statement, made the day before Sproul finally withdrew from consideration, is quoted by his deputy, Major General Barney Giles, in a letter to Spaatz, 15Oct44, Spaatz Collection, Box 16.

27. Memo by Perera, 14Nov44, "Conference at PINETREE," in NA, 243, 1, 71, 337. Eighth Air Force Headquarters were located at High Wycombe.

28. The account of D'Olier's travels on the continent is drawn from: (1) ltr, Alexander to Lovett, 27Nov44, NA, 243, 1, 63, 319.9; (2) Beveridge, Vol. 1, pp. 111-12; and (3) ltr, D'Olier to Spaatz, 25Nov44, Spaatz Collection, Box 16. Major General Currie was president of the AAF Evaluation Board for the MTO.

29. Memo by Nitze, 21Nov44, in NA, 243, 1, 2, 001.

30. Nitze's memo, 23Nov44, and the two short papers by Castle, "Air Power in This War and the Following Peace," are in NA, 243, 1, 37, 300.6-GG. The Castle papers were published after the war in *U. S. Air Services* (Sep1945), pp. 21-23, 54; (Oct1945), pp. 24, 27-28, 36; the issue for Apr1946, pp. 14-15, contains a brief biography of Castle. Interestingly enough, the theme of Noble Frankland's Lees Knowles Lectures at Trinity College nineteen years later concerned the persisting "severe underestimate of the tactical and operational limitations to which aircraft were subject in the Second World War." See his *Bombing Offensive Against Germany*, pp. 95-97.

31. This and the following paragraph drawn from: (1) ltr, Alexander to General F. L. Anderson, 1Dec44, replies by Anderson on 9 and 16Dec, and further reply by

Alexander on 20Dec44, all in Spaatz Collection, Box 225; (2) ltr, Alexander to Cabell, 1Dec44, NA, 243, 1, 67, 322, and Cabell's reply of 19Dec, NA, 243, 1, 76, 384.3; (3) ltr, Spaatz to Arnold, 9Dec44, Spaatz Collection, Box 16; and (4) ltr, Alexander to Lovett, 27Nov44, NA, 243, 1, 63, 319.9.

32. Ltr, adjutant general, War Department General Staff, to chairman, USSBS, 25Nov44, in NA, 243, 1, 63, 319.9.

33. Ltr, cited above, Alexander to Lovett, 27Nov44; ltr, Nitze to Alexander, 10Dec44, and reply thereto, same date, in NA, 243, 1, 14, 210.31; and ltr, cited above, Alexander to F. L. Anderson, 20Dec44.

34. Gardner had been recommended by both F. L. Anderson and Cabell. Sorenson was born at Glenville, Minnesota, in 1893; B.S., Univ. of Michigan, 1915; M.S. (aeronautical engineering), M.I.T., 1925; in 1917, a captain of coast artillery in the National Guard, State of Washington, he came to active duty with the Aviation Section of the Signal Corps, remaining with the service after the war.

35. Ltr, Kuter to F. L. Anderson, 15Dec44, in Kuter Papers. Lovett's ltr to Koenig, also 15Dec44, is reproduced in Beveridge, Vol. 2, frame 972.

36. Ltr, D'Olier to Stimson, 6Dec44, and Stimson's reply of 16Dec, both in NA, 243, 1, 77, 384.4.

37. Born at Albany, New York, 17 December 1892; A.B., Williams, 1915; law student at Harvard, 1915-17, 1919-20; in World War I, captain, Field Artillery, Silver Star and Distinguished Service Cross; returned to Albany after finishing at Harvard, becoming a partner in Whelan, McNamee, Crebel, and Nichols; recalled to active service in December 1942, becoming regional director, Second Region, Office of Civilian Defense, and eventually deputy director, OCD.

38. The Navy struggled, unsuccessfully, to retain Johnston, a widely known authority in aviation matters. Notified in Pearl Harbor to report at once to Washington, Johnston arrived in tropical gear on a freezing Christmas Eve. Unable to find out what was desired of him, he called his old friend, T. P. Wright, who advised him, "Oh yes, Paul, we sent for you." Born at Pittsburg, Pennsylvania, 3 August 1899; B.S., M.I.T., 1921; with Aluminum Company of America, 1921-29; editor of *Aviation*, April 1936 to January 1940; coordinator of research for NACA, 1940-42; manager, Washington office, Curtiss-Wright Corp., 1942-43; author of four books and co-author of a fifth, all on aviation affairs. Personal interview, Jul68, and subsequent correspondence.

39. Reports of the meetings with the British are in NA, 243, 1, 2, 001 and NA, 243, 1, 71, 337. On 12Dec44 the Survey absorbed its first major infusion of strength when 250 German-speaking enlisted men arrived by ship from the U.S. Collecting this group, in open competition with other organizations, had been one of the principal concerns of the men in the Survey's Washington Liaison Office. Beveridge, Vol. 1, pp. 135, 236. Copies of the lectures, which ran from 17 to 29 December, are in NA, 243, 1,

74, 353.02, and NA, 243, 1, 72, 350.001.

40. Perera's "Notes for a Lecture on 22Dec44" are in NA, 243, 1, 74, 353.02; D'Olier's remarks are in NA, 243, 1, 72, 350.001. D'Olier sent copies of both to Alexander (who had returned to Washington on 21 December) for the latter to show to Generals Fairchild and Kuter; D'Olier's letter is filed with his remarks.

41. Colonel Perera was left in charge in London, remaining so until Nitze's return on 15 January.

42. At the Pentagon, 5 and 6 January; present were: D'Olier, Alexander, Nitze, Searls, Wright (and his deputy, Commander Johnston), Ball, Likert, and Russell (who agreed on 3Jan45 to become director of the Oil Division).

43. Fairchild's remarks are from his letter to Alexander, 30Dec44, about "the preliminary outline of material which you and Mr. Nitze so kindly left with me the other day." NA, 243, 1, 61, 319.4.

44. Ward was born at Kansas City, Missouri, 17 March 1908; A.B., Harvard, 1930; M.B.A., 1932; National Recovery Administration (NRA), 1933-35; personal assistant to W. A. Harriman, New York City, 1935-37; director of the WPB's Compliance Division, 1940-42; and director of organizational control for WPB until entering active duty late in 1942. Ward's efforts can be followed in his correspondence with D'Olier, Alexander, and Perera, NA, 243, 1: 6, 200.3; 19, 230.02 and 230.03; 20, 230.13; 34, 300.6-D; 62, 319.5; and 63, 319.9. His many helpful contacts included Fowler Hamilton, mentioned in Chapter 2 in connection with the COA. Many responses from those approached are in NA, 243, 1: 44, 311.21, two folders labelled "Telegrams;" and 20, 230.11, folder labelled "Eligible for Appointment, Civ."

45. Machine tools, abrasives, optical instruments, other precision instruments, alloy steel, heavy engineering, motor vehicles, tanks, electrical power, and aircraft manufacturing.

46. Difficulty in recruiting qualified civilians was the spur to this decision; but it was also true that Alexander came more and more to appreciate the abilities of many military people, career men and otherwise, assigned to the Survey. It is an interesting commentary on a perennial problem that when D'Olier requested the change, "the first reaction of the War Department was that substitution of officers for civilians appears to be a misuse of military personnel and a depreciation of rank." Ltr, D'Olier to Alexander, 26Jan45, NA, 243, 1, 6, 200.3.

47. By July 1945, when the question arose as to whether the Survey should proceed to Japan, Alexander was ready to use primarily military personnel. "I think, Mr. D'Olier, that a relatively small group of civilians using a large number of the young, able officers that we have in our crowd could probably handle the job." Transatlantic telephone conversation, 6Jul45, NA 243, 1, 45, 311.3. The civilian problems, especially re pay and status, are documented in NA, 243, 1: 5, 160 (Contracts); 6, 200.3 (Personnel Allotments and Requisitions); 19, 230 (Civilians, General); 25, 248.1 (Pay, Employees, Civ.); 22, 230.744 (Charges Preferred Against); and variously in the files

containing the administrative correspondence of the separate Divisions.

48. Colonel McNamee (Civilian Defense Division) arrived in London on 11 January. Bowman (Physical Damage Division) did not return for several months, Colonel Zierdt acting as his deputy on the scene until mid-March. Searls (Munitions Division), kept busy by Mr. Byrnes, secured as his deputy on the scene Mr. William D. Mullestein, assistant sales manager of the Van Dever-Lukens Steel Company of Coatsville, Pennsylvania. Russell (Oil Division) remained in London only a few weeks, his deputy being Mr. Horace D. Dale, production manager for the Shell Oil Co., ably assisted by Mr. W. C. Asbury (a chemical engineer from Standard Oil) and Major W. L. Boyden, Jr.

49. Beginning in January, regular meetings were convened in London at 9:30 A.M., six days a week. Minutes of these meetings are in NA, 243, 1: 2, 001 (January to April) and 71, 337 (April to August).

50. Beveridge, Vol. 1, p. 126. These figures include personnel both assigned and "attached" (temporarily borrowed from other organizations). After VE-Day, large numbers were borrowed from USSTAF and 8AF to support the by then enormous workload of the Publications Section of the Secretariat. The total number of civilians employed rose to 269; the average period of employment was 4.08 months at an average annual salary rate of \$5,575. It is interesting to note that the "average last previous annual salary rate" of the civilians was \$9,230. NA, 243, 1, 19, 230.

51. Strickland joined the Survey in Washington, succeeding Donahoe in charge of the Washington Liaison Office. In January he transferred to London, becoming executive of the Services Division (see below). His exceptionally valuable work behind the scenes is recounted with gusto in Beveridge, Vol. 1, Chapters 7 and 8.

52. The 41,215 square feet acquired at Bushy Park provided space for the Intelligence Library, the Tabulating Records Section (see below), the photographic labs, and supply warehouses. The minutes of the Staff Conferences in early February detail the reluctance of many to make the move.

53. G-1, Administrative Branch (Personnel, Adjutant, Fiscal, Medical); G-2, Intelligence Branch; G-3, Plans, Operations, and Movements; and G-4, Supply and Maintenance.

54. The contemporary historian, an old soldier himself, took great pains to credit the individual contributions, elsewhere unsung, of the people who made up this Division. See Beveridge, Vol. 1, pp. 120-72.

55. A blow-by-blow account of this transition is provided in the correspondence between Dr. Bowman (in the U.S. until May) and the successive chiefs of the Physical Damage Division, Colonel Zierdt until mid-March and Lieutenant Colonel John W. Beretta thereafter. These letters, numbering more than one hundred, are found scattered throughout the files; most can be found in the following folders: NA, 243, 1: 14, 210.4 and 210.45; 38, 300.6-M; 50, 312.11; and 60, 319.4. Most valuable are those from Zierdt to Bowman, 26Jan45 (38, 300.6-M) and Beretta to Bowman, 1May45 (60,

319.4).

56. To be treated in the next chapter.

57. The chart reproduced as Figure 2 was known as "the doughnut chart." It was designed by Commander Johnston during February as the best way visually to portray the distinctly non-military organizational scheme of the Survey. This version of the chart dates from 7June45; earlier versions (18Feb, 14Mar, 6Apr, and 25May) are reproduced in Beveridge, Vol. 2, frames 986-91.

58. Ltr, Alexander to Anderson, 20Dec44, Spaatz Collection, Box 225.

59. The numerous versions of this outline are preserved in NA, 243, 1, 34, 300.6 and 300.6-D.

60. Cabot was born at Brookline, Massachusetts, 27 November 1900; A.B., Harvard, 1922; L.L.B., 1925; practiced law in Boston, first with Choate, Hall, and Stewart, and after 1933 with Ropes, Gray, Best, Coolidge, and Rugg; appointed to the Superior Court in 1943. The initial approach to Cabot was made by his long-time friend, Colonel W. Barton Leach (see Chapter 2). Ltr, J. Harris Ward to Alexander, 26Feb45, NA, 243, 1, 19, 230.03.

61. The names and backgrounds of Cabot's principal editorial assistants are given in Beveridge, Vol. 1, pp. 225-26. Among them were Major Colbert, Major J. Harris Ward, John D. Glover, an assistant professor of economics from Harvard, and a number of others with editing or publishing experience.

62. In the early stages it was hoped that Survey teams would be able to inspect the records of all the major German government ministries. As matters turned out, however, many of these never became available, having either been destroyed or otherwise lost as a result of the bombing, or destroyed by the Germans to keep them out of enemy hands.

63. The work of this Section, under Lieutenant Colonel Thomas E. Sunderland, would make a book in itself. Working in both Newark (with personnel and facilities donated by Prudential) and Europe, it compiled on punch cards the entire attack record of both the USAAF and RAF. The *Statistical Appendix to the Overall Report (European War)*, a supplementary volume not normally listed among the Survey's reports, gives a detailed account of their work; cf. Beveridge, Vol. 1, pp. 227-34; NA, 243, 1: 37, 300.6-GG and 300.6-HH; 54, 314.7.

64. One of many similar memos, scattered throughout the USSBS files. This one, 31Jan45, unsigned (but sounding like Nitze), is titled, "Method and Sources of Data for Overall Economic Survey," NA, 243, 1, 34, 300.6-D. In the same folder see a memo, Perera to Nitze, 17Jan45, "Basic Principles for the Economic Investigation."

65. Without exception, every USSBS participant interviewed by the present writer confirms this evaluation of Alexander's role.

NOTES

CHAPTER FIVE

1. Albert Speer, *Inside the Third Reich* (New York: Macmillan, 1970), p. 346; cf. Craven and Cate, 3, 175-79.

2. Craven and Cate, 3, 636-71; 641-42 for the quotation.

3. *Ibid.*, 637-38.

4. *Ibid.*, 649.

5. Many would argue that any such corollary applies only fitfully and has lost its force (thus far) under the nuclear umbrella. Perhaps, but informed critics of certain tactical techniques used by both air and ground units in the Vietnam conflict would insist the corollary remains valid within recognized limits. For World War II, however, there can be no argument. In that conflict, Allied leaders lost sight of the fact that the war was not a thing in itself, and, consequently, the attainment of victory came to be virtually the only limit imposed on the conduct of warfare; in such circumstances it became all but inevitable that the war would not end until all of the counters had been played.

6. Craven and Cate, 3, 668. "The only justification [for the experiment with radar bombing] was the assumption that blind bombing was better than no bombing and it is hard to avoid the conclusion that the 'numbers racket'—pressure from Washington to get more planes over Europe—was responsible for some wasted effort." (xi) "... radar-bombing methods continued to prove disappointing. The Eighth Air Force had an average circular probable error of about two miles on its blind missions, which meant that many of its attacks depended for effectiveness upon drenching an area with bombs." (723) "Approximately 80 percent of all Eighth Air Force and 70 percent of Fifteenth Air Force missions during the last quarter of 1944 were characterized by some employment of blind-bombing devices. . . . In mid-November, operations analysts of the Eighth estimated that slightly more than half the blind missions of that organization were near failures or worse. . . ." (667)

7. Diary entries for 5 and 9Jan45; ltr to General Arnold, 7Jan45; all in Spaatz

Collection, Box 20.

8. "Air force commanders actually enjoyed great latitude in waging the air war and sometimes paid scant attention to the official priority lists drafted with such care at higher echelons. And the weather was final arbiter in any case." Craven and Cate, 3, 721. Controlling the effort of RAF Bomber Command proved even more difficult; see Webster and Frankland, 3, 46, 48-49, 57, 304-305, 310.

9. Ltr, Arnold to Spaatz, 14Jan45, quoted in Craven and Cate, 3, 716.

10. Craven and Cate never really face up to this issue, although they do admit (3, 727) that "opposition in the AAF to area bombardment had actually weakened" by February 1945. Their treatment of Dresden, however, is disingenuous at best; and for reasons best known to the authors, they make no mention at all of the Eighth Air Force attack on Dresden, 17Apr45, comprising 572 effective sorties. See Webster and Frankland, 3, 108-09.

11. Anthony Verrier, *The Bomber Offensive* (New York: Macmillan, 1969), p. 304 (emphasis added). Verrier's greater concern is that he sees a message for today in the conduct of the World War II air offensive. That offensive, he argues, directed by men who became obsessed with what was tactically (or operationally) feasible, got out of control. What assurance have we, he asks, that any future air war, presumably nuclear, will remain under the control of the properly constituted political leadership? It is unlikely that his questions will give pause to the Herman Kahns among us.

12. Although he tries very hard to avoid doing so, Verrier seems occasionally to blend together the differing operational imperatives of the Eighth Air Force and RAF Bomber Command.

13. *American Strategy in World War II: A Reconsideration*, pp. 114-17, 120-21.

14. Ltr to the author, 2Jul69.

15. "The strategic air offensive was practically over by the first of April. The Fifteenth Air Force was now devoted to purely tactical objectives. . . . The Eighth Air Force carried out ten last strategic missions in Germany before redirecting its effort entirely to the land battle." Craven and Cate, 3, 752.

16. The term "improvised air war" should not be misconstrued to imply that the air war was conducted without an overall plan. The term was first used by Major General Orvil A. Anderson, who was referring to the necessity, as seen by the commanders on the scene, so often to deviate from the original plan owing to weather conditions, diversions created by the demands of the ground forces, etc. "Improvised," therefore, as I am using it, refers to the day-to-day difficulties that had to be surmounted over a period of three years. The theme of Major General Haywood S. Hansell's *Air Plan that Defeated Hitler*, reiterated by Hansell to the author as recently as 24Aug75, is that had the air forces been allowed to proceed under the original plan (AWPD-1), "the devastation that characterized Germany in March of 1945 might have been imposed by mid-summer of 1944."

17. NA, 243, 1, 63, 319.9.

18. Cf. Perera's *Washington and War Years* (cited earlier and in the Bibliography), pp. 119-77, for a more detailed analysis of the imperatives, both real and perceived, affecting these elements of decision.

19. Ltr, Nitze to Alexander, 4Apr45, in the file cited above in note 17.

20. The complete report, comprising a three-page covering letter from Mr. D'Olier and thirteen variously authored attachments, is in NA, 243, 1, 71, 337, "Conferences, Military & Naval & Others."

21. Transatlantic telephone conversation, 13Apr45, in NA, 243, 1, 45, 311.3.

22. The most valuable portions of Major Beveridge's contemporary history are the chapters devoted to each of the Survey's thirteen Divisions. Divided topically after page 120, his account loses the threads of historical continuity, but for each Division he lists the individual Field Teams, their personnel, their itineraries, and their adventures. See Beveridge, Vol. 1, pp. 120-72, 241-400.

23. Ltr, Lieutenant Colonel Garth Cobb (in Paris) to Major Colbert, 19Sep44, NA, 243, 1, 62, 319.5.

24. "Administrative Report on Renault Trip," 30Nov44, NA, 243, 1, 35, 300.6-D, "Economic Division, 1944, Oct-Dec."

25. Ltr, Nitze to Alexander, 5Apr45, NA, 243, 1, 48, 312.1.

26. As indicated in one of the quotations heading this chapter.

27. Ltr, Commander Johnston to T. P. Wright, 24Apr45, NA, 243, 1, 300.6-B. For the depredations of Allied troops, NA, 243, 1, 39, 300.6-E; for those of DP's, NA, 243, 1, 54, 314.7, draft histories of Reg. Hq. #4 (Frankfurt) and #5 (Essen); also Beveridge, Vol. 1, p. 193.

28. One of the effects of the bombing was to require the Germans continually to revise their production plans. Such repeated revisions made it almost impossible to identify production *goals* covering any period longer than three months. Destruction of records, either by bombing or by the Germans themselves, left numerous gaps in the records of *actual* production.

29. One example: when compiling man-hour figures for skilled v. unskilled labor, the Germans counted under "skilled labor" *any* work performed by their skilled craftsmen and machine operators; hence, skilled laborers pulled off the job to clean up debris had their time recorded under "skilled labor" while unskilled laborers performing the same task had their time recorded as "unskilled labor." A thorough discussion of semantic and translating difficulties brought on by the "emergent aspect" of German word construction is contained in an unsigned memo to George Ball, 6Jan45, "Progress From 26 December to 6 January," NA, 243, 1, 54, 314.7, "Trans Div Hist."

30. Noted in most of the final reports of each Division of the Survey, this problem was described also in the Coffin Report (to be described below in this chapter): "In many fields the production statistics are full of traps. . . . It must be appreciated that they were usually compiled under some pressure from above calling for increased production. 'You must demand the impossible in order to get the maximum,'

appeared to be the Fuhrer's slogan. Under these circumstances Speer must have tended to make his statistics serve his Ministry by sometimes showing Hitler's demands to have been more nearly met than they actually were. It was the same kind of pressure exerted further down the line which tempted steel producers to exaggerate production losses due to air attacks in order to cover up their mistakes and inefficiencies." "The Contribution of Air Power to the Defeat of Germany," Appendix K, Section One, para. 4(c), "The Evidence Qualified."

31. Report of Captain Milton C. George, Area Studies Division, from Krefeld, 8Apr45, NA, 243, 1, 36, 300.6E; the first quotation in the paragraph is also from this report. "Improper" looting is the term used by Colonel McNamee (Civilian Defense Division) at the staff conference of 29May45; on looting see also minutes of staff conferences, 19 and 21Apr45. The most serious case of a civilian using his position in an apparent effort to obtain data useful to his parent company is detailed in NA, 243, 1, 22, 230.744; cf. Beveridge, Vol. 1, pp. 438-40. Civilian members wore military uniforms with a USSBS shoulder patch and special insignia to indicate their assimilated rank. The highest such ranks were those of D'Olier (Major General) and Alexander (Brigadier General); most ranged between Major and Colonel. Such ranks served numerous administrative purposes such as deciding priority for billeting and transportation.

32. Ltr, Commander Johnston to T. P. Wright, 24Apr45, NA, 243, 1, 34, 300.6-B. The same letter is quoted above describing the destruction carried out by advancing troops and marauding DP's.

33. Such "Special Supplies" were requested by Colonel Koenig as early as 21Oct44; his ltr to Lieutenant Colonel Donahoe, NA, 243, 1, 6, 200.3. The minutes of the staff conference for 16Mar45 announced the approval of an allotment to each Field Team of various "hospitality food items;" cf. NA, 243, 1, 80, 430, "Subsistence Stores."

34. From para. 2, Appendix A, "S. O. P. for Field Operations of Survey Teams, Area Studies Division," undated, NA, 243, 1, 36, 300.6-E, italics in original; and from report of Lieutenant Richard B. Fisher, 4Apr45, covering activities in Darmstadt, NA, 243, 1, 36, 300.6-E.

35. Based on: (1) minutes of staff conference, 1May45; (2) interview with S. Paul Johnston, 15Jul68; (3) notes compiled by Major Beveridge for his chapter on the Aircraft Division, NA, 243, 1, 53, 314.7, "Aircraft Div Hist (ETO)."

36. Beveridge, Vol. 1, pp. 145-50. Perry's and Steene's backgrounds are not revealed in the USSBS files; Sklarz, age thirty-two, had been born in Berlin, had studied languages and medicine there and languages in Paris. A naturalized U.S. citizen, he listed among his talents "concert pianist and arranger." NA, 243, 1, 14, 210.6-A. His report of his initial interview with Speer is in NA, 243, 1, 53, 314.7, "Military Histories."

37. Born in Berlin, Jacobi was a naturalized U.S. citizen who had attended the Universities of Heidelberg and London. He was fluent in German, French, Dutch, and Flemish. NA, 243, 1: 210.6-A, and 53, 314.7.

38. Enloe's exploits were revealed at a USSBS press conference at the Pentagon, 4Dec45, on the occasion of the public release of the report of the Medical Branch. A transcript of the conference is in NA, 243, 1, 54, 314.7, "Medical Division History."

39. Beveridge, Vol. 1, pp. 296-97; 232.

40. Born at Nikolaev in the Ukraine, 8 December 1910. His father was a physician and moderate Socialist who took the family out of Russia soon after the Revolution; Baran traveled to Vilna (1921), thence to Dresden where he attended the Gymnasium, thence to the Plekhanov Institute of Economics, Moscow (1926-28), thence to Berlin (1928), Frankfurt (1930), Breslau (1930-31), Berlin again where he finished his Ph.D. in economics, thence to Paris for a short while, then Moscow again (1934-35), Warsaw (1936-37), London (1938-39), and from there to the U.S. in October 1939 where he entered the graduate school at Harvard. During the war he worked in Washington at the Brookings Institution, then with the OPA, and finally with the OSS until March of 1945 when he joined the Survey. Paul M. Sweezy, ed., *Paul A. Baran: A Collective Portrait* (New York: Monthly Review Press, 1965).

41. Translated and reproduced by USSBS, Wagenfuehr's manuscript is entitled "The Rise and Fall of the German War Economy." Several copies are scattered throughout the USSBS records; see, e.g., *Index to Records of the United States Strategic Bombing Survey* (Washington: G.P.O., 1947), p. 56. Copies are also in the Air Force Archives under control number 137.317-2, 1939-1945.

42. This tone of understatement permeates the team's report of its activities, preserved in Beveridge, Vol. 2, frames 1037-42. For the location of Passauer's "Evaluation of the Air War Against the Reich Territory, 1942-1944" in the USSBS files, see the Index volume cited in the preceding note, p. 10.

43. Had the report cited above not been preserved by Major Beveridge, it is unlikely that Colonel Ames would have been overly helpful to the present writer. Writing to me about this affair on 22Apr69, General Cabell advised: "I suggest you get Ames to write the bare facts about it and then get Perera and me to ensure that it is not obscured by modesty. If he writes it as he told it to me in Potsdam right after it happened, it would be like a coat of olive drab paint over the Hope Diamond."

44. Beveridge, Vol. 1, pp. 325-26, 429-30.

45. Ltr, Lieutenant Colonel Beretta to Bowman, 1May45, NA, 243, 1, 60, 319.4. Beretta's judgment is implicitly confirmed in the minutes of the Staff Conferences. The two men whose remarks were most regularly recorded were Alexander and Nitze; conversely, the man whose presence at most meetings he attended is least evident, in the written record to be sure, was D'Olier.

46. Already at age thirty-six a noted author and lecturer, Galbraith was born at

Iona Station, Ontario, 15 October 1908; B.S., Toronto, 1931; M.S., University of California, 1933; Ph.D., 1934; instructor at Harvard, 1934-39; assistant professor at Princeton, 1939-42. Previous wartime posts included: economic advisor to the National Defense Advisory Committee, 1940-41; assistant (later deputy) administrator, Price Division, Office of Price Administration, 1941-43. Having ruffled many a Washington feather in his OPA post, Galbraith left government service in 1943 to join the board of editors of *Fortune*.

47. Ltr, Ball to Nitze, 3Feb45, NA, 243, 1, 34, 300.6-D.

48. Ltrs, Lovett to Spaatz, 22Apr45, and Eaker to Spaatz, 5May45, in Spaatz Collection, Box 21. The entire list of interrogations used by the Survey is in the USSBS *Index* volume, pp. 259-61; transcripts are preserved in NA, 243, 13, Boxes 1 to 8, and NA, 243, 8, Boxes 206-18. The two most important interrogations of Albert Speer have been reproduced in Webster and Frankland, 4, 371-95.

49. Anderson was born on 2 May 1895 at Springville, Utah; he attended Brigham Young University until entering the Air Service as a flying cadet in August 1917. Remaining on active service after the war, Anderson became a balloonist for many years; in 1935 he was pilot of Explorer II when it set a world altitude record of 72,395 feet. After the Air Corps Tactical School (1937) and Command and General Staff School (1938), he joined the Air War Plans Division at AAF Headquarters, eventually becoming its chief. He arrived in the United Kingdom in 1943 where he became chairman of the Combined Operational Planning Committee and soon thereafter Deputy Commander for Operations, Eighth Air Force.

50. Its members were: General Omar N. Bradley, Vice-Admiral Robert L. Ghormley, Lieutenant General Lucius D. Clay, Rear Admiral Richard E. Byrd, and Brigadier Generals Rupert E. Starr, Ludson D. Worsham, and Edgar P. Sorenson. The most important contribution of the Board was the so-called "Bradley Report," a 195-page book published at Wiesbaden, 15Jul45, *Effect of Air Power on Military Operations, Western Europe*. On the whole, the report expressed the principal complaints of ground commanders; e.g., "The method of obtaining employment of strategic air forces in a tactical role was too ponderous and difficult. . . . This campaign proved that ground direction of aircraft to targets was extremely effective and did not cause loss of flexibility of air force control." A copy of this report is in the Special Collections, Air University Library, Maxwell AFB, Alabama.

51. Information in this paragraph is based on an interview with Major General (USAFR, Ret.) Ramsay D. Potts, Jr., 26Apr68. Then a colonel, Potts was Orvil Anderson's chief of staff for the Military Analysis Division. Although General Potts did not name names, a reading of the minutes of the Survey's staff conferences leads one to conclude that Galbraith and occasionally Nitze were among those who might have made such statements. The attitude in question is elsewhere revealed in such statements as: "In December 1941, we had the machinery set up for ultimate victory."

Edward R. Stettinius, Jr., *Lend-Lease: Weapon for Victory* (New York: Macmillan, 1944), p. 158.

52. Although never published, the Coffin Report is an exceptionally valuable document and should be read in conjunction with the Survey's *Over-all Report (European War)*. Copies are in the Air Force Archives at control number 519.601C and in the USAF Academy Library (photostat); correspondence regarding it is in NA, 243, 1, 71, 337; cf. ltr, Brigadier General George C. McDonald to Major General Elwood R. Quesada, 10Oct45, Spaatz Collection, Box 22.

53. On the wartime struggle over postwar defense policy, see the studies cited earlier in Chapter 3, n. 24.

54. Beveridge, Vol. 1, pp. 213-20.

55. The discussions in Washington during June and July can be traced in NA, 243, 1: 57, 319.1, "Reports—USSBS & JTG Conferences;" 2,001, "Meeting," which contains a transcript of initial conference with JTG; the transcripts of transatlantic telephone conversations during the period, found variously in 45, 311.3, "Telephone," and 72, 337.1, "Conversations (Telephone);" 71, 337, minutes of the staff conference for 23 June, at which Alexander reported on the Washington meetings; 76, 383.8, "Industrial Sites," containing several memos and letters including the final recommendations of USSBS to JTG, 5Jul45 (revised in London, 1Aug45); Spaatz Collection, Boxes 21 and 225; and Beveridge, Vol. 1, pp. 115-19.

56. Staff Conference, 23Jun45, NA, 243, 1, 71, 337.

57. Apparently, the compilers of the AAF official history were not privy to these deliberations between USSBS and the JTG, certainly not to the attempt by USSBS to make shipping and rail transport the primary targets. Otherwise it would be difficult to account for the following comments: "Members of the survey, in their hindsight evaluation of target selection, suggested that XX Bomber Command planes might have been more profitably employed against shipping and oil targets in the Outer Zone than in strikes from China bases, and that XXI Bomber Command should have devoted more effort toward exploiting the difficulties caused by earlier attacks on shipping. This latter task would have involved an intensification of the B-29 mining operations and a campaign against Japan's railway system." (Craven and Cate, 5, 754, italics added.) In fact, as soon as they were asked to express an opinion, early in June, they recommended precisely that.

58. A copy of the final target directive is in the Spaatz Collection, Box 21.

59. Actually it was not until November that the last elements of the Survey departed London for Washington. Most of those who stayed with the Survey moved during August and September to offices at Gravelly Point in Virginia, on land now occupied by the Washington National Airport. Mr. Russell moved his Oil Division to New York where it stayed together until the completion of its main report, among the most valuable of all the Survey publications (European item Nr. 109). With the

exception of a few who flew east from London to Guam, Survey personnel redeployed to the Pacific via Washington and two weeks' furlough in the States.

NOTES

CHAPTER SIX

1. The decision to use China as a base had been prompted in part by President Roosevelt's decision to encourage Chinese morale. For the background to B-29 design, development, and employment, see Craven and Cate, 5, Chapter 1, "The VLR Project." In time, the VLR designation came to be attached to fighter escorts, the B-29s being designated VHB (Very Heavy Bombardment) aircraft. A good brief narrative of B-29 operations is in A. Russell Buchanan, *The United States and World War II* (New York: Harper and Row, 1964), Vol. 2, pp. 568-94.

2. Craven and Cate, 5, Chapter 2, "The Twentieth Air Force."

3. "Hurriedly" applies only in retrospect; the rate of progress in getting the Marianas bases into operation was agonizingly slow for the air commander on the scene. See Major General Haywood S. Hansell, Jr., "The First of the Twenty-First," *Air University Review*, 18, 4 (May-June 1967), pp. 1-17. The detailed record of operations from India and China (Project MATTERHORN) is in Craven and Cate, 5, Chapters 3-6.

4. Hansell's prewar role at the Air Corps Tactical School and his part in formulating AWPD-1 were treated above in Chapter 1.

5. Craven and Cate, 5, 546-76, for the initial campaign from the Marianas and the operational difficulties encountered; the quotation is from page 576.

6. Analyzed in Craven and Cate, 5, 573-76, and in USSBS Pacific item Nr. 66, *The Strategic Air Operation of Very Heavy Bombardment in the War Against Japan*.

7. Many Americans, civilians as well as soldiers, could distinguish between the Nazis and the German people as a whole; Pearl Harbor, "a sneak attack," confounded the basic problem of the difference in race, and resulted in no such distinctions for "the Japs." One of the highest ranking air commanders of the war has privately confirmed to the author that there existed "a basic distinction in our think-

ing" between the Japanese and the Germans.

8. For the background to area bombing in Japan, see Craven and Cate, 5, 608-14, especially the section headed, "The Case for Fire Bombing;" for the development of incendiary bombs, going back to World War I, see Brooks E. Kleber and Dale Birdsell, *The Chemical Warfare Service: Chemicals in Combat* (Washington, D.C.: Office of the Chief of Military History, 1966), Chapter 17, "Fire From the Air," and the sources cited therein. USSBS findings supported the basic assumptions re types of construction, building materials, level of building intensity ("builtupness"), and interspersions of residential and industrial buildings. See, for examples: photographs and diagrams, pp. 4.08-4.24 of *Evaluation of Photographic Intelligence in the Japanese Homeland: Part Four, Urban Area Analysis* (USSBS Pacific item Nr. 101); text, photographs, and drawings, pp. 38-115 of *A Report on Physical Damage in Japan* (USSBS Pacific item Nr. 96). A valuable history of target planning for Japanese targets is contained in Appendix A (pp. 69-82) of *The Effects of Strategic Bombing on Japan's War Economy* (USSBS Pacific item Nr. 53); this summary traces the planning of mass incendiary attacks as far back as the February 1943 FEA study entitled "Mass Attack on Japanese Cities."

9. Craven and Cate, 5, 614-20.

20. Most, but not all; an intermittent precision campaign continued (*ibid.*, 645-53), a program of aerial mining of Japanese coastal waters was initiated (662-74), and from 17 April to 11 May XXI Bomber Command devoted 75 percent of its effort to supporting the Okinawa campaign (627-35).

11. Such, at any rate, was the basic conclusion of USSBS; see the *Summary Report (Pacific War)*, especially p. 26, and USSBS Pacific item Nr. 2, *Japan's Struggle to End the War*.

12. J. Kenneth Galbraith, for example. In Major Beveridge's files is a "draft outline of final report left by Galbraith on Tokyo desk." The final lines of the draft refer to "conclusions to be derived from this miserable business." There is a line drawn through "miserable," and pencilled in immediately above is the word "appalling." Other report writers, however, were as ruthlessly logical as General LeMay. "High explosives seemed to cause only localized damage without any possibility of a catastrophe bonus. The incendiary was the logical weapon." *A Report on Physical Damage in Japan*, p. 38; and, "The limiting capabilities of bombsighting equipment and unusual Japanese weather combined to reduce the effectiveness of visual bombing from very high altitudes. The attendant threat of this condition to retard the tempo of bombing operations could not be accepted." This statement, as well as any other, reflects the view of the airmen charged with producing results. It is from the Military Analysis Division report on the Twentieth Air Force (cited above, USSBS Pacific item Nr. 66), p. 32.

13. Times change, of course, and each war (conflict, police action, etc.) differs in

some way from those preceding it. But those repelled by bombing of any form and sharply insistent about "telling it like it is" must allow the historian to tell it like it was. For an analysis of how, in the public mind, the word target became synonymous with the word city, see Robert C. Batchelder's discussion of "The Evolution of Mass Bombing," in his *Irreversible Decision* (Boston: Houghton Mifflin Company, 1962), pp. 170-89.

14. The best statistical tables for the Japanese campaign appear in the final report of the Aircraft Division, *The Japanese Aircraft Industry*, USSBS Pacific item Nr. 15. Like the Oil Division's final report for Europe, this report is the single most valuable report for Japan among those produced outside the chairman's office.

15. A copy of the President's letter is reproduced in Beveridge, Vol. 4, frames 405-6.

16. Beveridge, Vol. 3, p. 249.

17. The total number of civilian technical consultants dropped from about 260 to about 150. One must say "about" because precise figures were not kept, because so many civilians were borrowed temporarily from other agencies, and because some who participated would do so only on an informal basis. At least one-half of the total number of "civilians" employed were used exclusively for their language abilities; these included American, Japanese, Korean (and at least one Russian) civilians. Altogether, the G-1 Section (Administration) of the Services Division processed just over 1,000 persons, the uniformed personnel coming from the Army, Navy, Marines, Coast Guard, Public Health Service, Royal Air Force, and Royal Australian Air Force. *Ibid.*, p. 26.

18. For evidence of this feeling at several levels of authority, see Craven and Cate, 5, 626-27, 636, 653.

19. Revealed in transatlantic telephone conversation, 4Jul45; NA, 243, 1, 45, 311.3. See also the summary of D'Olier's remarks during the 28Nov45 staff conference in Tokyo, Beveridge, Vol. 3, pp. 22-23.

20. NA, 243, 1, 45, 311.3. Another reason for downgrading the civilian complement is revealed in the July staff conferences and telephone conversations. Businesses and industries in the States, from whom men had been borrowed with the understanding that they would be returned sixty days after VE-Day, had begun raising a considerable fuss about their people still in Europe. Some of the men themselves (such as those originally responsible for producing a report on the steel industry—a report neither completed nor published) grew impatient and insisted on returning to their parent companies. Then, of course, there were the academics, whose work year began in September and who were wary of getting caught out of a job in the middle of the school year.

21. Nitze's earlier accomplishments have been recorded in Chapters 4 and 5. His role during the five-week-long confrontation with the JTG in Washington was

exceptionally valuable, D'Olier describing it on 19 July as follows: "Paul is the one who has done the whole job, helped very substantially by Ernie Williams, because they are now convinced that transportation is absolutely the prime target and they are going at it just as soon as they possibly can." NA, 243, 1, 45, 311.3. Officially, Alexander continued on the rolls, organizational charts for the Pacific listing both him and Nitze as vice-chairmen.

22. Gardner had been the original choice (after Cabell) for Sorenson's job in Europe. Arnold's refusal to release him at that time was cited in Chapter 4. Born in Pine Valley, Utah, in 1892, Gardner held a B.S. degree from Utah Agricultural College (1914) and an M.S. from M.I.T. (1927); commissioned in the Air Service in 1917; continuous service thereafter, primarily in the Materiel Command as an Aircraft Engineering and Armaments officer; student and instructor at ACTS, 1932-37.

23. Note that of all the directors, the names of only two are shown as actively in charge of specific Divisions, Mr. Spaght of the Oil and Chemical Division and Dr. Thompson of the new Medical Division. Alexander, Wright, Searls, and Likert did not go to Japan.

24. E.g., Lieutenant Colonel Chapman, Commander Johnston, Mr. Ruggles, Major Hales, Mr. Ingersoll, Mr. Mitchell.

25. Technically, the Military Analysis Division was redesignated as Army and Army Air Forces, but Anderson preferred the European designation and continued to use it. Joining Anderson on the Board of Military Advisors were: Rear Admiral Ralph A. Ofstie for the Navy; Major General W. E. Marquat as General MacArthur's representative; Major General Leslie R. Groves, formerly in charge of the Manhattan Project; and Brigadier General Gardner.

26. Ofstie was born at Eau Claire, Wisconsin, in 1897; B.S., USNA, 1918; served in destroyers until attending flight training in 1922, thereafter serving continuously in naval aviation. Among his assignments were: test pilot for Naval Bureau of Aeronautics; member, American team for Schneider Cup Race, 1925; commander, Flying Squadron Nr. 6 on the USS *Saratoga*; operations officer for Admiral Halsey on the *Saratoga* and *Yorktown*, 1939-41; attaché duty, London, 1941-42; aviation officer on the staff of Admiral Nimitz, 1942-43; captain of USS *Essex*, Oct43-Aug44, seeing action at Rabaul, Tarawa, Kwajalein, Truk, the Marianas, and the Philippines; in Apr45 transferred to Atlantic Fleet, returning to the Pacific in Sep45 to join the Survey.

27. Brothers joined the Survey at Guam where he had been an operations research analyst for the Twentieth Air Force. The numerical strength of the Division in Japan exceeded 150 persons, including forty engineers, ten photo interpreters, eleven ordnance experts, ten fire damage experts, six operations analysts, twenty interpreters, forty-five draftsmen, and seventeen attached RAF personnel. Beveridge, Vol. 3,

pp. 116-31.

28. Since he replaced Russell, Spaght was added to the list of directors. Spaght was born at Eureka, California, 9 December 1909; A.B., Stanford, 1929; A.M., 1930; Ph.D. (Chemistry), 1933; research chemist and technologist, Shell Oil Co., 1933-40; manager, development and manufacturing, 1940-45; in Jan45 joined NAVTECMISEU and in Sep45 joined USSBS.

29. Ruggles was born at Columbus, Ohio, 15 June 1916; A.B., Harvard, 1939; A.M., 1941; Ph.D., 1942; joined OSS and was assigned to EWD, in which capacity he participated in the early planning of the Survey in the spring of 1944.

30. Detailed research on the physiological effects associated with incendiary bombing proved impossible, to the evident consternation of the doctors. "The Medical Division was unable to find evidence of a single group organized for study, or even a single autopsy performed relative to the nature of the casualties by incendiary and high-explosive raids on Japanese cities. No one in a sufficiently high position for his opinion to be worthy of consideration seemed to appreciate the need of such information." *The Effects of Bombing on Health and Medical Services in Japan* (USSBS Pacific item Nr. 12), p. 147.

31. Dr. Thompson was born at Lafayette, Indiana, in 1883, earning his medical degree at Louisville Medical College in 1905; in 1906 he joined the Philippine Constabulary as a medical officer, returning to the U.S. in 1910 to join the Public Health Service where he rose steadily through the ranks during a distinguished thirty-five-year career. Unwittingly, and much to his dismay, Thompson was continually a source of confusion among the rank-conscious military; technically holding the rank of brigadier general (one star), he preferred to be called "Doctor," while his PHS uniform was an almost exact duplicate of that worn by rear admirals (two stars).

32. Morale they defined as a combination of "confidence in victory and social solidarity." By using interviews and questionnaires they were able to demonstrate a drop in both categories, hardly surprising in a country being torn apart by bombing. For their definition see *The Effects of Strategic Bombing on Japanese Morale* (USSBS Pacific item Nr. 14), p. 11; being good sociologists, they outlined their method in detail in this report. Cf. the interesting historical analysis of the Division's conceptual approach compiled by two of the researchers, David Krech and Egerton Ballachee, "A Case Study of a Social Survey: Japanese Survey, United States Bombing Survey" (University of California Press, March 1948), a 270-page reproduced typescript, a copy of which is in the Library of the National Academy of Science in Washington; and an article by the Division's executive officer, George H. Huey, "Some Principles of Field Administration in Large Scale Surveys," *Public Opinion Quarterly*, 11, 2 (Summer 1947), pp. 254-63. For a roster of key personnel, see Beveridge, Vol. 3, pp. 189-91.

33. The Meiji Seimei building had been the main office of Japan's largest life

insurance company, so Mr. D'Olier, sharing the building with Hq, Far East Air Forces, must have felt quite at home. As he did in Europe, Major Beveridge took great pains to describe the various facilities. His verbal tour of the Survey's headquarters starts on the eighth floor with a description of the view and proceeds downward, floor by floor, to the basement where we find: "It was a little difficult for the average American to get used to the unabashed presence of cleaning women and girls in the washrooms while said American was attending to essential natural functions, but after a while it was taken as a matter of course while in Nippon to do as the Nips do." Beveridge, Vol. 3, p. 18.

34. *Ibid.*, p. 80.

35. Nitze, General Anderson, J. Kenneth Galbraith, Colonel Ramsay Potts (Anderson's executive officer), Lieutenant Commander Richard Reeve (formerly an Intelligence officer on the USS *Wasp*, then briefly with the Survey in Europe, and now in charge of G-2 of the Services Division), and Lieutenant Commander Walter Wilds (who had joined the Survey in Europe as liaison to the JTG and in Japan served D'Olier in a special assistant capacity not unlike that of Colonel Perera in Europe).

36. Where they discussed the CBI Theater and the B-29 operations from China with Lieutenant General George E. Stratemeyer, commanding Army Air Forces in the China Theater.

37. The trip covered 9,461 miles, concluding in Tokyo on 25 November. NA, 243, 1: 53, 314.7 and 2, 001; Beveridge, Vol. 3, pp. 20-21.

38. The Island Study Group was manned from the Military and Naval Analysis Divisions, in addition to other officers borrowed temporarily from other services when and where available. For the results of its investigations, see USSBS Pacific items 65, 69-71, 74-77.

39. Accordingly, "industrial statistics were gathered from 4500 detailed responses to factory questionnaires. Approximately 2400 of these, containing a complete series for all production factors were tabulated to assess the effect of bombing on the production of hit and unhit plants. Five field teams were engaged in key urban regions for 8 weeks supervising the collection of industrial and collateral material." *The Effects of Air Attack on Japanese Urban Economy*, USSBS Pacific item Nr. 55, p. iv.

40. E.g., Mr. Harvey Colton and Mr. C. K. Parker, long-time residents of Kobe and Osaka respectively; Dr. Marion Hall, who had lived for many years in Hiroshima; Mr. Andrew M. Nelson, Seventh Day Adventist missionary and noted lexicographer.

41. By 7 November the Language Section numbered approximately 200 plus twenty-one native Japanese; among the most important in the latter category were several recruited by Admiral Ofstie, including government officials and university professors he had known during his prewar tour in Tokyo.

42. Cultural, racial, and religious differences played a part in creating American

amazement at the Buddhist fatalism of the Japanese, many of whom seemed to feel that since the Americans had won the war they must have been in the right all along. Of course the Americans themselves were *certain* of that, but the relative absence of vengeful hatred and resentment astounded them. For the views of a member of the U.S. Education Mission to Japan, see Ernest R. Hilgard, "The Enigma of Japanese Friendliness," *Public Opinion Quarterly*, 10, 3 (Fall 1946), pp. 343-48.

43. Beveridge, Vol. 3, pp. 173-74.

44. *Ibid.*, p. 221.

45. A point not lost on some airmen as early as 3 January 1943 when General Sorenson (then a colonel and working with the COA) wrote to General Kuter (then commanding the First Bomber Wing in England) as follows: "Even if we believe that Germany can be defeated by air power alone, we must concede the practical necessity of the presence of strong ground forces of our own to take control, if not to fight, and to obviate the undesirable necessity of occupation being taken over by our allies from farther East." Ltr in Hansell Collection.

46. NA, 243, 1, 33, 300.6.

47. NA, 243, 1, 1, 000.72.

48. A copy of the seven-page memorandum excerpted here is in the Orvil A. Anderson Papers in the Air Force Archives, Control No. 168.7006-13. The report commented upon was not published.

49. The author has been unable to locate a copy of Nitze's letter to the Navy Department. However, its existence is attested to in a letter from Ofstie to Nitze, 10Mar47 (NA, 243, 1, 80, 461), in which Ofstie, in the course of arguing why General Anderson's report (USSBS Pacific Report #71a) should not be published, reminded Nitze of his earlier action in the case of his own report on "The [Carrier] Air Effort Against Japan."

50. Ltr, Nitze to Lieutenant Colonel McMurrin, 24Dec46, NA, 243, 1, 80, 461.

51. Memo for Record, 16Dec46, by Captain William S. J. Curley, Chief, Intelligence Branch. The phrase "violently objected" in the preceding paragraph is taken from this memo. NA, 243, 1, 67, 322.011.

52. On 2Jan47 Lieutenant Colonel McMurrin, acting chief of administration, wrote to Mr. D'Olier as follows: "When this report was received by this office from the printer, we had no record of its having been processed through the editorial division; however, it was included on the Survey's printed list of Japanese publications. . . . Captain Curley had to communicate with Mr. Nitze and Mr. Wilds, one of whom gave the approved report to Admiral Ofstie who gave it directly to GPO." *Ibid.*

53. NA, 243, 1, 80, 461.

54. Ltr, Lieutenant Colonel McMurrin to D'Olier, 14Jan47, in NA, 243, 1, 12, 210.2.

55. NA, 243, 1, 67, 322.011.

56. McMurrin's letter in NA, 243, 1, 59, 319.2; D'Olier's in NA, 243, 1, 60, 319.4.

57. NA, 243, 1, 12, 210.2.

58. "We must appreciate . . . that it is still defensive action, and not aggression, if we intercept and destroy an enemy force en route to our Nation, bent upon our destruction. Still further, we must recognize that an overt act of war has been committed by an enemy when that enemy builds a military force intended for our destruction, and that the destruction of that force before it can be launched or employed is defensive action and not aggression." *Air Campaigns of the Pacific War*, USSBS Pacific item Nr. 71a, pp. 68-69.

59. *Ibid.*, p. 69.

60. NA, 243, 1, 80, 461.

61. The original of this memorandum, bearing the signature of D'Olier, is in NA, 243, 1, 82, 486.4, "Printing and Binding."

NOTES

CHAPTER SEVEN

1. Russell's European Oil Division had been recruited largely from among New York-based companies, and D'Olier had agreed—after Russell had arranged for office space—to let them finish their reports in New York. Like Russell's, Spaght's return to his parent company was urgently pressed on D'Olier who agreed that the Pacific Oil Division could finish its work near Spaght's office in San Francisco.

2. *New York Times*, 28Oct44, p. 10, bottom of column 2.

3. *Ibid.*, 13Mar45, p. 4, column 3.

4. *Baltimore Sun*, 25May45, Philip W. Whitcomb's article under headline, "Probe Casts Doubt on Efficacy of Strategic Bombing of Reich," dateline Hamburg, 23May45.

5. *New York Times*, 2Sep45, p. 18, column 3. Because of the "conservative" views cited by Baldwin, there was growing concern within the Survey and within Mr. Lovett's office that the detailed findings of the Survey might not be published; budgeting concern over the cost of publication was also present. These factors, taken together with the precision and accuracy of Baldwin's column as a whole, have led the present writer to presume that the column was a "plant" to encourage public interest.

6. Transcript of press conference in Air Force Archives, control nr. 137.5-2.

7. Anderson's stance in this matter directly paralleled that of Billy Mitchell twenty-six years earlier: "Mitchell's basic answer to his critics was an appeal to look to the future. Only an independent organization manned by airmen could develop the full potential of aeronautics. When one congressional committee asked him about Trenchard's Independent Bombing Force, the closest example of the kind of independent operation aviation might pursue in the future, Mitchell would make no claim for it. The IBF was 'just beginning. So I say, you cannot look back.'" Hurley, *Mitchell*, pp. 47-48.

8. Copies of press releases and press clippings from major newspapers and magazines are filed in NA, 243, 1: 1, 000.7 and 000.75; 2, 000.75—six file folders in all.

9. See the General Introduction to *The United States Strategic Bombing Survey*, edited with introductions by David MacIsaac, in ten volumes (New York: Garland Publishing, Inc., 1976) for a guide to the various reports and their relative status vis-à-vis one another.

10. Pacific reports 92 and 93, the detailed analyses by the Physical Damage Division, remained classified for a number of years because they contained precise measurements on such things as the height of the bomb bursts.

11. This report by Wilds, like Nitze's *Summary Report*, became the starting point for later accounts like those of Robert J. C. Butow, Herbert Feis, and Paul Kecskemeti.

12. *Summary Report (Pacific War)*, USSBS Pacific report #1, p. 32; preceding quotations from this report come from pp. 26, 28, and 29.

13. Ltr, 11Jul46, Anderson to Secretary of War (Thru: Commanding General, AAF), NA, 243, 1, 58, 319.1A. In 1958, then retired from active duty and editor of *Air Power Historian*, Anderson published this fourteen-page letter in full; see *Air Power Historian*, 5, 3 (July 1958), pp. 80-94.

14. See above, Chapter 6.

15. Craven and Cate, 5 (published in 1953), 754.

16. Assistant Chief of Air Staff, Intelligence; Headquarters Army Air Forces, *Mission Accomplished* (Washington, D.C., U.S.G.P.O., 1946). The Air Force-Navy battle over how best to interpret the "lessons" of the war in the Pacific continued for a number of years, culminating during the famous "B-36 Bomber vs. Supercarrier" controversy of 1949-50. For some examples, see: R. A. Ofstie and J. A. Field, Jr., "War in the Pacific," *Air Affairs*, 1, 2 (Dec 1946), pp. 196-217; Orvil A. Anderson, "Air War in the Pacific," *Air Affairs*, 1, 4 (Summer 1947), pp. 541-56; Paul Y. Hammond, "Super Carriers and B-36 Bombers: Appropriations, Strategy and Politics," in Harold Stein, ed., *American Civil-Military Decisions* (University of Alabama Press, 1963), pp. 465-567. In the congressional hearings of October 1949 Admiral Ofstie attacked strategic air warfare, as a means of waging war, on the basis of its presumed "immorality." U.S. Congress, House of Representatives, Committee on Armed Services, *The National Defense Program: Unification and Strategy* (81st Cong., 1st sess.; Washington: U.S.G.P.O., 1949), pp. 183-93.

17. See USSBS Pacific report #54, *The War Against Japanese Transportation, 1941-1945*, pp. 6-12. The economists agreed with the transportation experts; see Pacific report #53, *The Effects of Strategic Bombing on Japan's War Economy*, p. 3.

18. NA, 243, 1, 8, 200.6.

19. NA, 243, 1, 10, 201.62.

NOTES

CHAPTER EIGHT

1. Theodore von Karman (with Lee Edson), *The Wind and Beyond* (Boston: Little, Brown and Company, 1967), pp. 267-68; cf. the remainder of Chapter 33, "The Vision of Hap Arnold." Cf. also Arnold's Third Report to the Secretary of War, 12Nov45, in *The War Reports of Marshall, Arnold, and King* (Philadelphia & New York: J.B. Lippincott Company, 1947), pp. 419-70, but especially 452-70.

2. To be sure, there were precedents for using civilians to investigate and evaluate the air arm. The Morrow and Baker Boards, of 1925 and 1934, respectively, were important milestones in aviation history; even earlier, in May 1919, "the Assistant Secretary of War, Benedict Crowell, led an official delegation of Army, Navy, and aircraft industry representatives to Europe . . . for a three-month study of English, French, and Italian aeronautics." Hurley, *Mitchell*, p. 48.

3. *Over-all Report (European War)*, p. 8, Chart #6.

4. "The German experience showed that, whatever the target system, no indispensable industry was permanently put out of commission by a single attack. Persistent re-attack was necessary." *Ibid.*, p. 108; "The experience of the Pacific war supports the findings of the Survey in Europe that heavy, sustained and accurate attack is required to produce decisive results when attacking an enemy's sustaining resources." *Summary Report (Pacific War)*, p. 28.

5. The absence of a labor representative was not lost on Aneurin Bevan, who commented as follows: "We doubt the bona fide purpose of this Survey as little as that of the Allied Control Commission, but *in view of the strange composition of the leading personnel of the mission*, we cannot help suspecting that some people at least have high hopes of using it for the purpose of killing quite a number of birds with one stone." *London Tribune*, 23Mar45 (italics added).

6. To take one example among many, a member of the Secretariat advised

Alexander on 10Sep45: "The reason advanced for denying that there is any valid distinction between strategic and tactical air power is simply that the distinction is not absolute; it is muddy, the two things merge together, it is impossible to form a neat definition that will fit all cases. All this may be granted. To reject the distinction, however, because it is not absolute is to be purely theoretical. In practical affairs distinctions are never absolute. It might as well be argued that there is no difference between a young man and an old man since you cannot say just when youth ends and age begins. . . ." NA, 243, 1, 34, 300.6-B.

7. By "centrally controlled," airmen have traditionally meant that all aircraft in a given theater be deployed from a central air headquarters rather than have the aircraft parcelled out to support specific ground or naval units. By this means, air power can be applied in mass at the decisive points. In the bombing of North Vietnam, however, central control, exerted from within the White House itself, was carried to such extremes as to destroy its original *raison d'être*—flexibility. See Colonel (USAF, Ret.) Jack Broughton's *Thud Ridge* (Philadelphia & New York: J.P. Lippincott Co., 1969), *passim*; the Introduction by Hanson Baldwin says much in few words.

8. In a presumably satirical article, Mrs. Drew applied the comparative method to the recent history of government commissions, drawing up eight "rules" on "The Uses of Commissions:" three on "How to Choose a Commission;" five on "The Process of Commissionmanship;" and five on "How to Handle the Report." Examples are cited for each rule; the three on how to choose a commission are as follows: 1. Neither commissioners nor staff should be controversial; 2. Commissioners should be bipartisan and otherwise representative of constituent groups, as long as they are respectable; 3. The chairman should be able, and safe, but better safe than able. *The Atlantic Monthly*, May 1968, pp. 45-49.

9. It is another question, of course, whether today's elaborate intelligence network is capable, by its very nature, of answering for the future the precise questions that might be asked of it. That network is made up of eight cooperating (but essentially autonomous) agencies: CIA; Defense Intelligence Agency; National Security Agency; and the Intelligence sections of the Army, Air Force, Navy, State Department, and Federal Bureau of Investigation. Each member of each agency should ponder, each day, the remarks of Marc Bloch about the intelligence functions of the French Army in 1940: "In the first place, too many people were concerned in the business of gathering information, and there was an ugly atmosphere of competition among them. . . . As soon as Intelligence found out anything, it proceeded to put it down on paper, mark the document in red ink "Top Secret," and then shut it away from all those likely to be interested in its contents, in a safe with a triple lock." *Strange Defeat* (Oxford University Press, 1949), pp. 83-84.

10. Colonel Broughton (in *Thud Ridge*, p. 63) makes the point succinctly; after

complaining about the selection of targets in North Vietnam and the dictating, from the White House, of aerial tactics to be employed, he goes on: "The pressure was on to get this complex [of targets], and when we got into that configuration, it was amazing how the simple basic portents of warfare dipped by the boards to be replaced by determination to accomplish what we had been directed to accomplish." Cf. the present writer's "Leadership, Strategy, and Reflection: Or, 'What's An Officer To Do?'" in *Air University Review*, 19, 4 (May-June 1968), pp. 88-93; especially p. 92.

11. See Clark M. Clifford, "A Viet Nam Reappraisal: The Personal History of One Man's View and How it Evolved," *Foreign Affairs*, 47, 4 (July 1969), pp. 601-22.

12. Stewart Alsop, *The Center: People and Power in Political Washington* (New York: Harper & Row, 1968), pp. 162-63. Alsop credits these stands taken by Nitze as responsible for his being passed over for secretary of defense upon the resignation of R. S. McNamara. On the question of bombing North Vietnam, Nitze's status as a "hidden dove at the Pentagon" is supported by the *New York Times* reports (by Hedrick Smith, *et al.*) in early March 1969 purporting to describe the events leading up to the bombing halt of March 1968.

13. Most of the widely read reports are in that sanitized style wherein we of the twentieth century have learned to describe the indescribably horrible. There are some notable exceptions, however; e.g., "The Nature of Air Raid Casualties," Chapter 3 of USSBS European item nr. 65, *The Effect of Bombing on Health and Medical Care in Germany*. The photographs in that chapter equal or exceed any that we have from Dachau or Auschwitz.

14. New York: McGraw-Hill Book Company, Inc., 1951.

15. University of Oklahoma Press, 1958.

16. New York: E.P. Dutton & Company, Inc., 1949. Leighton served with the Morale Division of USSBS in Japan.

17. Harvard University Press, 1959. Klein served with USSBS in both Europe and Japan.

18. University of London: The Athlone Press, 1965.

19. University of Minnesota Press, 1949. Cohen, then Lieutenant, USNR, served with USSBS in Japan.

20. Boston: National Fire Protection Association, 1946. Bond, a noted expert in fire damage, served with the Physical Damage Division in Europe.

SELECT BIBLIOGRAPHY

The following bibliography is select in the sense that it lists only those sources that contributed measurably to the foregoing narrative. These were mostly unpublished sources, described below under Manuscript Collections and Other Unpublished Materials. It is not an unimportant consideration that most of the primary sources were official papers of one kind or another; in proceeding, the author has kept in front of him the comments of two famous Englishmen, both well versed in the ways of officialdom: "A study of the record of the meetings at Casablanca which originated our business was not helpful. Such records rarely are, since what is of real value in such affairs is usually that which is not written down." (Lieutenant General Sir Frederick Morgan, *Overture to Overlord*, London: Hodder & Stoughton, Ltd., 1950, p. 78); and "The information that is to be found in an official document will have been put there—if we may assume that the document has been drafted competently—in order to serve some official purpose which, whatever it may have been, will certainly not have been the irrelevant purpose of informing a future historian." (Arnold Toynbee, *A Study of History*, Vol. X, Oxford University Press, 1954, p. 227).

Manuscript Collections

Record Group 243, National Archives, Washington, D.C.: Textual records of the United States Strategic Bombing Survey. Altogether these records amount to 977 cubic feet, arranged under twenty-seven "Entries," variously arranged. Within this collection, the

- principal source was Entry 1, Administrative Correspondence, Office of the Chairman, 1944-47, comprising ninety archive boxes and arranged according to the War Department decimal classification scheme. The collection is described in *Records of the United States Strategic Bombing Survey*, compiled by Marilla B. Guptil and John Mendelsohn, National Archives Inventory Series No. 10, Washington, D.C.: U.S.G.S.A., 1975. Another valuable finding aid is the *Index to Records of the United States Strategic Bombing Survey* (Washington, D.C.: U.S.G.P.O., 1947, 317 pp.).
- Spaatz Collection, Library of Congress, Manuscript Division. The personal and official papers of the late General (USAF, Ret.) Carl Spaatz, described in detail in Marvin W. McFarland, "The General Spaatz Collection," *The Library of Congress Quarterly Journal of Current Acquisitions*, 6, 3 (May 1949).
- Hansell Collection, USAF Academy Library, Special Collections. Two file drawers of personal and official correspondence of Major General (USAF, Ret.) Haywood S. Hansell, Jr.; includes a copy of General Hansell's manuscript "American Air Power in World War II," 467 pp. in typescript.
- Orvil A. Anderson Collection, USAF Historical Archives, Maxwell Air Force Base, Alabama. Three file drawers of personal and official papers, donated to the Archives by the widow of the late Major General (USAF) Orvil A. Anderson.
- Kuter Papers, USAF Academy Library, Special Collections. Twenty-odd archive boxes containing personal and official memorabilia (including several scrapbooks of photographs) of General (USAF, Ret.) Laurence S. Kuter.
- Miscellaneous papers and documents, Air Force Archives, Maxwell Air Force Base, Alabama. Particularly helpful were the files indexed under USSBS, USSTAF Hq, Eighth Air Force, Fifteenth Air Force, Joint Target Group, Air Corps Tactical School, Committee of Operations Analysts, and AAF Evaluation Board(s).
- Eaker Collection, Library of Congress, Manuscript Division. The personal and official correspondence of Lieutenant General (USAF, Ret.) Ira C. Eaker. The boxes for 1944 and 1945, containing correspondence with Generals Spaatz and Arnold, provide insights not available in the USSBS files.
- Arnold Collection, Library of Congress, Manuscript Division. The personal and official correspondence of the late General of the Army H. H. Arnold. The 1943-45 correspondence with General

Spaatz, although not as complete a record as in the Spaatz Collection, contains numerous documents in their original, signed form.

Other Unpublished Materials

- Assistant Chief of Staff, Intelligence, Hq, United States Air Forces, Europe. "The Contribution of Air Power to the Defeat of Germany." 3 vols. plus Appendices A through M, all in typescript, 7 August 1945. (NOTE: This is the so-called "Coffin Report," after Lieutenant Colonel Caleb Coffin, principally responsible for its preparation; copies are in the Air Force Archives, Maxwell Air Force Base, Alabama.)
- Becker, Peter W. "The Basis of the German War Economy Under Albert Speer, 1942-44." Unpublished Ph.D. dissertation, Stanford University, 1971.
- Behr, Robert M. "An Analysis of the Factors Which Limited the Strategic Air Offensive Against Germany in World War II." Maxwell Air Force Base, Alabama: Air War College Research Report No. 2671, April 1965.
- Beveridge, James. "History of the United States Strategic Bombing Survey." Unpublished four-volume typescript (two of narrative and two of supporting documents). Washington, July 1946. (NOTE: The typescript is available in the files of the Office of the Chief of Military History, the Forrestal Building, Washington, D.C. Microfilm copies can be obtained through the same office; in 1967 the cost-to-purchaser for the complete microfilm copy was \$13.46.)
- Krech, David, and Edgerton Ballachey. "A Case Study of a Social Survey: Japanese Survey, United States Bombing Survey." Made available in multilith form by the University of California Press, March 1948. (NOTE: The only copy known to the author is in the Library of the National Academy of Science, Washington.)
- Legere, Lawrence J., Jr. "Unification of the Armed Forces." Unpublished Ph.D. dissertation, Harvard University, 1951.
- Perera, Guido R. "History of the Organization and Operations of the Committee of Operations Analysts." Unpublished typescript, ca. 1944, in the Air Force Archives, Maxwell Air Force Base, Alabama.

Published Materials

- Alsop, Stewart. *The Center: People and Politics in Political Washington*. New York: Harper & Row, 1968.
- Andrews, Marshall. *Disaster Through Air Power*. New York: Rinehart & Company, 1950.
- Arnold, H. H. *Global Mission*. New York: Harper & Brothers, 1949.
- Batchelder, Robert C. *The Irreversible Decision, 1939-1950*. Boston: Houghton Mifflin Company, 1962.
- Baumbach, Werner. *The Life and Death of the Luftwaffe*. New York: Coward-McCann, 1960.
- Bekker, Cajus. *The Luftwaffe War Diaries*. Garden City, New York: Doubleday & Company, Inc., 1968.
- Bennett, D. C. T. *Pathfinder*. London: Frederick Muller, 1958.
- Berger, Carl. *B-29: The Superfortress*. New York: Ballantine Books, 1970.
- Blackett, P. M. S. *Military and Political Consequences of Atomic Energy*. London: Turnstile Press, 1948.
- Bond, Horatio (ed.). *Fire and the Air War*. Boston: National Fire Protection Association, 1946.
- Bowman, Gerald. *War in the Air*. London: Evans Brothers, 1956.
- Boylan, Bernard L. *Development of the Long-range Escort Fighter*. Maxwell Air Force Base, Alabama: USAF Historical Study No. 136, 1955.
- Bradley, Omar N. (and Air Effects Committee, Twelfth Army Group). *Effect of Air Power on Military Operations, Western Europe*. Wiesbaden, 15 July 1945. (NOTE: Officially published in book form by the U.S. Army, the only copy known to the author is in the Air University Library, Maxwell Air Force Base, Alabama.)
- British Bombing Survey Unit. *The Strategic Air War Against Germany, 1939-1945*. London: H.M.S.O., n.d. (NOTE: The reports of the BBSU remained classified until the early 1960s. Copies of their reports are in the Air Force Archives, Maxwell Air Force Base, Alabama.)
- British Mission to Japan. *The Effects of the Atomic Bombs at Hiroshima and Nagasaki*. London: H.M.S.O., 1946; reprinted 1949.
- Brittain, Vera Mary. *Seed of Chaos: What Mass Bombing Really Means*. London: New Vision Publishing Co., 1944.
- Brodie, Bernard. *Strategy in the Missile Age*. Princeton University Press, 1965; c. 1959 by the RAND Corporation.

- Buchanan, A. Russell. *The United States and World War II*. 2 vols. New York: Harper and Row, 1964.
- Burns, James McGregor. *Roosevelt: The Soldier of Freedom*. New York: Harcourt Brace Jovanovich, 1970.
- Carroll, Berenice A. *Design for Total War: Arms and Economics in the Third Reich*. The Hague: Mouton, 1968.
- Cline, Ray S. *Washington Command Post: The Operations Division*. Washington: Office of the Chief of Military History, 1951.
- Cohen, Jerome B. *Japan's Economy in War and Reconstruction*. University of Minnesota Press, 1949.
- Collier, Basil. *A History of Air Power*. New York: Macmillan, 1974.
- Coox, Alvin D. *Japan: The Final Agony*. New York: Ballantine Books, 1970.
- Craven, Wesley Frank and James Lea Cate (eds.). *The Army Air Forces in World War II*. 7 vols. University of Chicago Press, 1948-1955.
- Davis, Vincent. *Postwar Defense Policy and the U.S. Navy, 1943-1946*. Chapel Hill: University of North Carolina Press, 1966.
- Dickens, Sir Gerald. *Bombing and Strategy: The Fallacy of Total War*. London: Sampson Low, Marston & Co., Ltd., n.d., but probably 1947 or 1948.
- Divine, David. *The Broken Wing: A Study in the British Exercise of Air Power*. London: Hutchinson & Co., Ltd., 1966.
- Dollinger, Hans. *The Decline and Fall of Nazi Germany and Imperial Japan: A Pictorial History of the Final Days of World War II*. New York: Crown Publishers, Inc., 1968.
- Driscoll, John J. "Impact of Weapons Technology on Air Warfare, 1941-1945." *Air Power Historian*, 6, 1 (January 1959), 28-50.
- Emerson, William R. *Operation Pointblank: A Tale of Bombers and Fighters*. USAF Academy, Colorado: The Harmon Memorial Lectures in Military History, No. 4, 1962.
- Emme, Eugene M. (ed.). *The Impact of Air Power*. Princeton, New Jersey: D. Van Nostrand Company, Inc., 1959.
- Falls, Cyril. *The Second World War*. London: Methuen & Co., 1948.
- Finney, Robert T. *History of the Air Corps Tactical School, 1920-1940*. Maxwell Air Force Base, Alabama: USAF Historical Study No. 100, 1955.
- Frankland, Noble. *The Bombing Offensive Against Germany: Outlines and Perspectives*. London: Faber and Faber, 1965.
- . *Bomber Offensive: The Devastation of Europe*. New York:

- Ballantine Books, 1970.
- Fuller, J. F. C. *The Second World War*. New York: Duell, Sloan and Pearce, 1949.
- Futrell, Robert Frank. *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force*. Air University: Aerospace Studies Institute, 1971.
- Geffen, William (ed.). *Command and Commanders in Modern Warfare*. 2nd, enlarged edition. Washington: U.S.G.P.O., 1971.
- Goss, Hilton P. *Civilian Morale Under Aerial Bombardment, 1914-1939*. Maxwell Air Force Base, Alabama: Air University Documentary Research Study, December 1948; reprinted 1952.
- Greenfield, Kent Roberts. *American Strategy in World War II: A Reconsideration*. Baltimore: The Johns Hopkins Press, 1963.
- Greer, Thomas H. *The Development of Air Doctrine in the Army Air Arm, 1917-1941*. Maxwell Air Force Base, Alabama: USAF Historical Study No. 59, 1955.
- Hansell, Haywood S., Jr. *The Air Plan that Defeated Hitler*. Atlanta: Higgins-McArthur/Longino & Porter, 1972.
- Harris, Sir Arthur. *Bomber Offensive*. New York: Macmillan, 1947.
- Hermann, Hauptman (pseud.). *The Rise and Fall of the Luftwaffe*. London: J. Long, Ltd., 1944.
- Hess, William. *B-17: Flying Fortress*. New York: Ballantine Books, 1974.
- Higham, Robin D. *Air Power: A Concise History*. London: McDonald, 1972.
- Hinton, Harold B. *Air Victory: The Men and the Machines*. New York: Harper & Brothers, 1948.
- Howard, Michael. *Studies in War and Peace*. New York: The Viking Press, 1970.
- Hurley, Alfred F. *Billy Mitchell: Crusader for Air Power*. New York: Franklin Watts, 1964; 2nd, revised edition, Indiana University Press, 1975.
- Iklé, Fred Charles. *The Social Impact of Bomb Destruction*. University of Oklahoma Press, 1958.
- Ingersoll, Ralph. *Top Secret*. New York: Harcourt, Brace & Co., 1946.
- Irving, David. *The Destruction of Dresden*. London: William Kimber & Co., Ltd., 1963.
- Janis, Irving L. *Air War and Emotional Stress: Psychological Studies of Bombing and Civilian Defense*. New York: McGraw-Hill Book Company, 1951.
- Johnson, Walter (ed.). *The Papers of Adlai E. Stevenson*, Vol. 2.

- Boston: Little, Brown, 1973.
- Keckskemeti, Paul. *Strategic Surrender: The Politics of Victory and Defeat*. Stanford University Press, 1958.
- Killen, John. *A History of the Luftwaffe*. London: Frederick Muller, 1967.
- Klein, Burton H. *Germany's Economic Preparations for War*. Harvard University Press, 1959.
- Kuter, Laurence S. *Airman at Yalta*. Boston: Little, Brown and Company, 1955.
- Lanchester, F. W. *Aircraft in Warfare*. London: Constable and Co., 1916.
- Lee, Asher. *Air Power*. New York: Praeger, 1955.
- Leighton, Alexander H. *Human Relations in a Changing World: Observations on the Use of the Social Sciences*. New York: E. P. Dutton & Company, 1949.
- Liddell Hart, Basil H. *The Revolution in Warfare*. Yale University Press, 1947.
- . *History of the Second World War*. London: Cassell, 1970.
- Loewenheim, F. L., et al. *Roosevelt and Churchill: Their Secret Wartime Correspondence*. New York: Saturday Review Press, 1975.
- Lyall, Gavin (ed.). *The War in the Air: The Royal Air Force in World War II*. New York: William Morrow & Company, Inc., 1969.
- MacCloskey, Monro. *From Gasbags to Spaceships: The Story of the U.S. Air Force*. New York: Richards Rosen Press, 1968.
- MacIsaac, David. "A New Look at Old Lessons." *Air Force Magazine*, 53, 9 (September 1970), 121-127.
- . "What the Bombing Survey Really Says." *Air Force Magazine*, 56, 6 (June 1973), 60-63.
- Matloff, Maurice and Edwin M. Snell. *Strategic Planning for Coalition Warfare, 1941-1942*. Washington: Office of the Chief of Military History, 1953.
- Matloff, Maurice. *Strategic Planning for Coalition Warfare, 1943-1944*. Washington: Office of the Chief of Military History, 1959.
- Middlebrook, Martin. *The Nuremberg Raid, 30-31 March 1944*. London: Allen Lane, 1972.
- Milward, Alan S. *The German Economy at War*. University of London: The Athlone Press, 1965.
- Mosley, Leonard. *The Reich Marshal: A Biography of Hermann Goering*. New York: Doubleday, 1974.
- Nickerson, Hoffman. *Arms and Policy, 1939-1944*. New York: G. P. Putnam's Sons, 1945.

- . "The Folly of Strategic Bombing." *Ordnance*, 33 (January-February 1949), 245-47.
- Perera, Guido R. *Leaves from My Book of Life*, Vol. 2 (*Washington and War Years*). Boston: Privately Printed, 1975.
- Pogue, Forrest C. *George C. Marshall: Ordeal and Hope, 1939-1942*. New York: The Viking Press, 1966.
- . *George C. Marshall: Organizer of Victory, 1943-1945*. New York: The Viking Press, 1973.
- . *The Supreme Command*. Washington: Office of the Chief of Military History, 1954.
- Price, Alfred. *Battle over the Reich*. Ian Allan, 1973.
- . *Luftwaffe*. New York: Ballantine Books, 1970.
- Quigley, Carroll. *Tragedy and Hope: A History of the World in Our Time*. New York: Macmillan, 1966.
- Richmond, Sir Herbert. *Statesmen and Sea Power*. Oxford: The Clarendon Press, 1946.
- Rumpf, Hans. *The Bombing of Germany*. New York: Holt, Rinehart and Winston, 1963.
- Sallagar, F. M. *The Road to Total War: Escalation in World War II*. RAND Report #R-465-PR, April 1969.
- Saundby, Sir Robert. *Air Bombardment: The Story of its Development*. London: Chatto & Windus, 1961.
- Seydewitz, Max. *Civil Life in Wartime Germany*. New York: The Viking Press, 1945.
- Sherwood, Robert E. *Roosevelt and Hopkins: An Intimate History*. New York: Harper & Brothers, 1948; revised edition, 1950.
- Smith, Perry M. *The Air Force Plans for Peace*. Baltimore: Johns Hopkins University Press, 1970.
- Snow, C.P. *Science and Government*. Harvard University Press, 1961.
- Spaatz, Carl A. "Strategic Air Power: Fulfillment of a Concept." *Foreign Affairs*, 24 (April 1946), 385-96.
- Spaight, J. M. *Air Power and War Rights*. London: Longmans, Green and Co., 1924; 2nd ed., 1933; 3rd ed., 1947.
- Spanier, John W. *World Politics in an Age of Revolution*. New York: Praeger, 1967.
- Spaulding, Oliver Lyman. *Ahriman: A Study in Air Bombardment*. Boston: World Peace Foundation, 1939.
- Speer, Albert. *Inside the Third Reich*. New York: Macmillan, 1970.
- Stanford Research Institute (in cooperation with the Institute of Re-

- search, Lehigh University). *Impact of Air Attack in World War II: Selected Data for Civil Defense Planning*. 1953. (NOTE: Partly published, partly in reproduced typescript; hard to find except in libraries that regularly receive all government publications.)
- Stewart, Irvin. *Organizing Scientific Research for War*. Boston: Little, Brown and Company, 1948.
- Suchenwirth, Richard. *The Development of the German Air Force, 1919-1939*. Maxwell Air Force Base, Alabama: USAF Historical Study No. 160, June 1968.
- Sweezy, Paul M. (ed.). *Paul A. Baran: A Collective Portrait*. New York: Monthly Review Press, 1965.
- Taylor, A. J. P. *English History, 1914-1945*. Oxford: The Clarendon Press, 1965.
- Tedder, Arthur William. *Air Power in War*. London: Hodder and Stoughton, 1947.
- . *With Prejudice: The War Memoirs of Marshal of the Royal Air Force Lord Tedder*. G. C. B. London: Cassell, 1966.
- Titmuss, R. M. *Problems of Social Policy*. London: H. M. S. O., 1950.
- Toland, John. *The Rising Sun*. New York: Random House, 1970.
- Tubbs, D. B. *Lancaster Bomber*. New York: Ballantine Books, 1972.
- United States Bureau of the Budget (War Records Section). *The United States at War: Development and Administration of the War Program by the Federal Government*. Washington: G.P.O., 1946.
- United States Civilian Production Administration. *Industrial Mobilization for War: History of the War Production Board and Predecessor Agencies*. Washington: G.P.O., 1947.
- Veale, F. J. P. *Towards Barbarism*. London: Thomson & Smith, Ltd., 1948. (NOTE: A 1953 edition of this book, published by the C. C. Nelson Publishing Company of Appleton, Wisconsin, bears the title *Advance to Barbarism*.)
- Verrier, Anthony. *The Bomber Offensive*. New York: Macmillan, 1969.
- Von Karman, Theodore (with Lee Edson). *The Wind and Beyond*. Boston: Little, Brown and Company, 1967.
- Wagner, Ray (ed.) and Leland Fetzer (transl.). *The Soviet Air Force in World War II: The Official History*. New York: Doubleday & Co., 1973.
- Wann, A. J. *The President as Chief Administrator: A Study of*

- Franklin D. Roosevelt. Washington: Public Affairs Press, 1968.
- Watson, Mark S. *Chief of Staff: Pre-war Plans and Programs*. Washington: Historical Division, Department of the Army, 1950.
- Webster, Sir Charles and Noble Frankland. *The Strategic Air Offensive Against Germany, 1939-1945*. 4 vols. London: H.M.S.O., 1961.
- Wright, Monte D. *Most Probable Position: A History of Aerial Navigation to 1941*. Manhattan: University of Kansas, 1972.
- (ed.). *Science, Technology, and Warfare*. Washington: U.S.G.P.O., 1971.

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